MADE IN U.S.A.
GENUINE
Trussell
74 CL

Sauromalus
obesus

Sauromalus
obesus

Mayhew
1958

Sauromalus obesus

Aug. 22 UCR campus, Riverside Co., Calif.

This morning Frank dug out 9 eggs in the middle outside lizard cage. The measurements were:

27.5 mm X 17.3 mm.
28.5 X 18.2
29.7 X 17.2
27.5 X 18.2
29.9 X 17.5
20.2 X 19.6
28.6 X 20.6
28.8 X 19.8
30.5 X 18.5

The average measurements were 27.9 mm. x 18.5 mm. The eggs were in a cavity, the top of which was 190 mm. (7½ inches) below the surface, the bottom was 210 mm. (8¼ inches) below the surface. The temperature in the cavity when it was opened at 0730 was 26.8°C. (air temp. at same time - 18.4°C.). The eggs had a whitish cast to them when the dirt covering them was brushed away. The shells were soft and slightly leathery. The eggs were not completely turgid, but were not very shriveled. The ♀ that laid the eggs is a young one caught 30 miles S. of Blythe, Riverside Co., Calif. She was brought to us April 13, 1958, + had been captured a day or two earlier.

Sept. 19 11 mi. E. of Glamis, Imperial Co., Calif.

One was seen this afternoon in a large rocky outcrop above a dry stream bed. Except for the wash itself, the area was quite barren.

1959

April 10 15 mi. S. of Furnace Creek, Death Valley Nat'l. Mon., Calif.

This morning at 0925 an adult ran across the highway in front of me. The area on each side of the road is flat and covered with numerous small rocks, a few of which are slightly larger than a man's head. No attempt was made to capture it.

April 19 Deep Canyon Des. Res. Station, Riverside Co., Calif.

We captured an adult and an immature in a canyon on the east side of the alluvial fan from Deep Canyon, and about 2 canyons north of Coyote Canyon. These were toe-clipped and released. The young animal was sitting on a rock in the sun when first seen. At our approach, it tried to escape by hiding under the rock. The adult was in a crevice beneath a small rock. Only a portion of its tail was exposed to give away its position. These two animals (the only ones seen) were captured within 5 minutes of

19 Near E. of Colonia, I surprised [illegible]
[illegible] this afternoon on
a large rocky outcrop about a
[illegible] [illegible] [illegible] for the
[illegible] [illegible] the [illegible] [illegible]
[illegible]

18 Near E. of [illegible] Creek, [illegible] [illegible]
This morning at 0930 an adult
[illegible] crossed the highway in front
of me. The area on each side of
the road is flat and covered with
[illegible] small rocks, a few of
which are slightly larger than a
[illegible] head. No attempt was made
to capture it.

19 [illegible], [illegible] [illegible]
We captured an adult and a [illegible]
in a canyon on the east side of
the [illegible] [illegible] [illegible] Canyon, ca.
about 2 [illegible] north of [illegible]
[illegible] [illegible] the [illegible] and [illegible] the
[illegible] [illegible] [illegible] sitting on a rock
in the sun when first seen. It was
apparently [illegible] [illegible] by [illegible]
under the rock. The adult was on
a [illegible] beneath a small rock
[illegible] a portion of its tail [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] (the only ones seen)
[illegible] [illegible] [illegible] [illegible]

April 19 Deep Canyon Des. Res. Station, Riverside Co., Calif.

each other. The air temp. (30") at that time was 26.6°C., the rock surface temp. (shade) was 26.2°C. (this temp. was taken in the shade because this was the spot where the adult was captured). The young animal had been moving, so no cloacal temp. was taken. The adult hadn't moved, however, so its cloacal temp. (24.4°C.) was taken.

May 16 Stoddard Valley, San Bernardino Co., Calif.

These animals didn't become active today until nearly noon. Then, however, they were quite numerous, even close to our campsite. We were able to capture 9 of them, and many others were seen that we didn't catch. They were still somewhat active when we stopped looking at 1415, but few of them were out sitting on rocks after about 1400.

July 21 Joshua Tree Nat'l. Monument, San Bernardino Co., Calif.

As we were driving through a rocky area this afternoon we saw an adult on top of a rock, (at 1450). At the time the rock surface temp. was 39°C. The wind was blowing 8-12 mph.

1961

July 1 UCR, Riverside Co., Calif.

The 2 young animals we have in captivity are becoming quite fond of the petals of an African daisy that grows beside

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Mayhew 1961

July 1 — UCR, Riverside Co., Calif.

Darwin Hall (*Gazania* sp.). They can't pluck the petals from a flower head that isn't attached to anything, so we remove the petals from a number of flowers & place them in a Petri dish, like hay in front of a cow.

Oct. 25 — #1, which was brought into the lab. as a juvenal in May, 1961, had lost a great deal of weight before we found the feeding solution. #2, on the other hand, (caught in June, 1961) was still nice & fat when the solution was found. Although both of them eat considerable amounts of *Gazania* petals, #1 is still quite thin whereas #2 has remained nice & fat. Both, however, have lost some weight compared to what they weighed when first captured. Both animals gained slightly this past month, however. Neither of them are as active as they have been. Both of them spend considerable time beneath the larger rock pile in their cage. They are sharing a 6 foot cage with 1 *Callisaurus draconoides* & 2 *Amphibolurus pictus*.

1962

Feb. 18 — Coxcomb Mts., San Bernardino Co., Calif.

Steven Peterson reported the presence

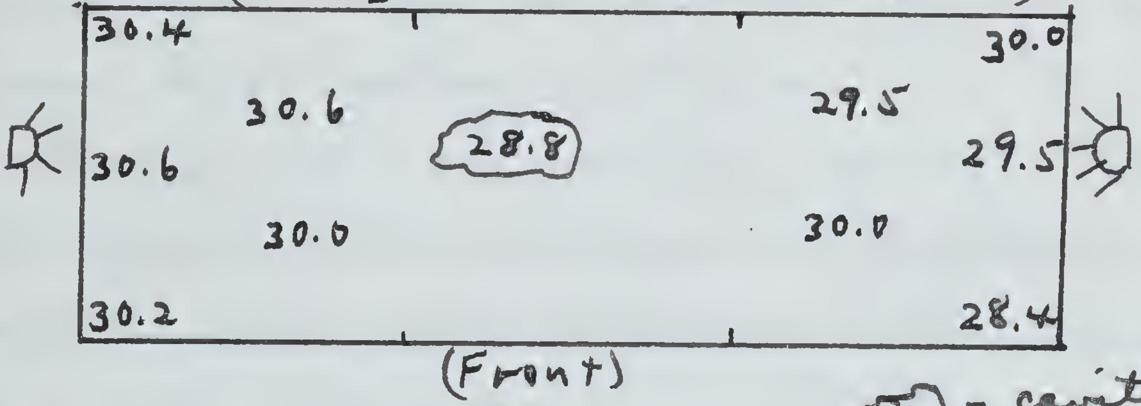
Feb 18 Coxcomb Mts., San Bernardino Co., Calif.

of two animals on the surface of the rocks today. The weather was not very warm. He said they weren't large adults, but weren't really very small. He was rock-hunting, so didn't try to catch them. They escaped into a crevice.

June 7 UCR, Riverside Co., Calif.

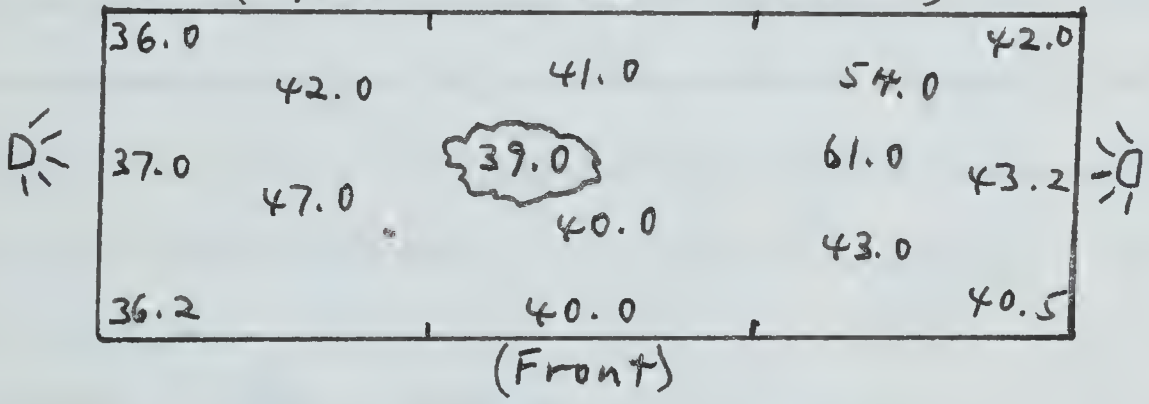
Soil temperatures in the cage (6'x 2') where 3 young are being kept are as follows:

0700 (No lights for approx. 13 hours)



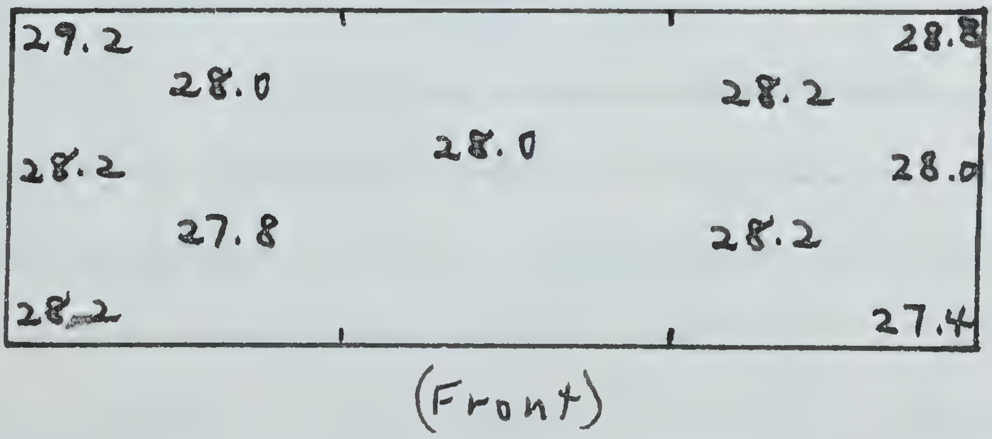
= cavity beneath rock

1600 (Lights for approx. 9 hours)

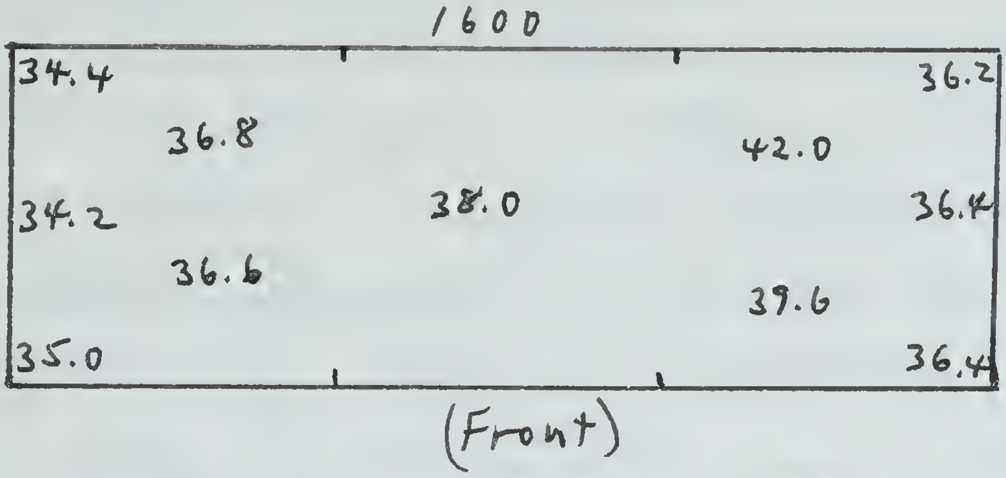


air temps. 1 centimeter above the surface are:

0700



June 7 — UCR, Riverside Co., Calif.



June 8 — This morning, for the first time, I saw #2 eat a mealworm that was thrown into the cage for *Amphibolurus pictus*. I continued to drop mealworms into the cage in front of #2 to see how many worms it would eat. It ate 21 in rather quick succession. It ignored the others I dropped in after that one. It smelled and nudged a mealworm pupa I dropped into the cage near the beginning of this experiment, but it would not eat the pupa. I dropped mealworms on top of the pupa to try to get the lizard to eat both, but it always left the pupa.

June 11 — #2 ate 32 mealworms this morning without slowing down. The other 2 chucks ignored the worms, even when dropped immediately in front of them. As soon as *Gazania* blossoms were offered, however, #3 began eating those at once. #2 ignored adult waxworms (*Galleria mellonella*).

July 6

UCR, Riverside Co., Calif.

#2 still eats mealworms avidly. Its sides are beginning to drag on the ground, it is getting so fat. I placed a dish of white *Gazania* petals in the cage this morning. #1 turned around on the rock pile as if to go to the dish as usual, but then it stopped and looked for about a minute before going to the dish. #3 then followed #1 to the dish, and both began eating petals. Then I placed another dish in the cage that contained the usual yellow petals. Both animals abandoned the white flowers, and began eating the yellow flowers. In a couple of minutes I removed both dishes, then returned them simultaneously to the cage a short time later. I intentionally placed the dish with the white petals between the yellow petals and these two animals. First, #1 walked over, sat in the white petals and ate the yellow petals. It left the dishes in a moment, and then #3 approached. It sniffed at the white petals, then walked across them to begin eating the yellow petals. All this time #2 ignored the proceedings,

July 6 UCR, Riverside Co., Calif.

since it is full of mealworms. None of the animals ate petals for very long, however, (all petals were gone eventually.)

July 9 Today I gave the animals a choice between yellow and orange *Gazania* petals. Both colors were eaten equally well. In fact, #1 went to the orange petals first, then switched to the yellow (the Petri dishes were placed side by side in the cage at the same time). #2, on the other hand, began with yellow petals, then moved over to eat orange petals. #3 began with yellow petals, but ate both with apparently equal relish. It sat between the two dishes and took bites from both with approximately the same regularity.

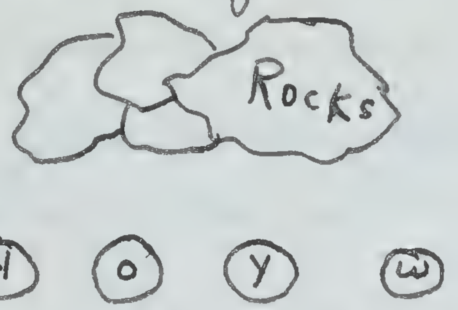
July 12 These animals were offered a dish of orange petals & a dish of white petals simultaneously. #1 climbed off the rock pile and walked directly to the orange petals, then began to eat. #2, #3 and *Amphibolurus pictus* had to walk past the white flowers to reach the orange ones. Each of them did just that— not one even gave the white petals a glance or sniff. All 4 animals stood around the orange petal dish

July 12 UCR, Riverside Co., Calif.
like cows at a feeding station, eating their fill. An hour & one-half after the petals were placed in the cage, nearly all the orange petals are gone, but few, if any, of the white ones have been eaten. #2 still eats mealworms every time they are placed in the cage. Today it ran over one-half the length of the cage (cage 6' long) to grab meal-worms that had been dropped in for Amphibolurus pictus. The other two chucks ignore the worms, even when they are dropped immediately in front of them.

This afternoon I offered them some Hypericum sp. petals, which are almost exactly the same shade of yellow as the Gazania petals. However, the Hypericum petals are more waxy in appearance and lacks the black dot at the base of the petal. Two of the chucks were in the rock pile. #2, however, walked over to the dish and cleaned it out with apparent relish. Then I placed four dishes in a row simultaneously, each with a different kind of petal: (1) Hypericum (2) orange Gazania (3) yellow Gazania (4) white Gazania. Thus, the animals could choose any of them

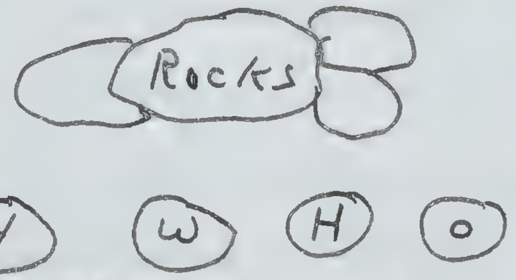
July 12 — UCR, Riverside Co., Calif.

with equal ease when they left the rock pile. They were arranged as follows:



#2 apparently had eaten its fill earlier because it didn't leave the rock. #1 arrived first and ate only (Y). #3 started with (Y), ate a couple of mouthfuls, then ate (O). When there were only 5 petals of (O) left, #3 went back to eating (Y). Then when most of (Y) were gone, #3 began eating (H). By the time both animals returned to the rocks, about 10 petals were left in (H), 3 in (O), 3 in (Y), and all of them still were in (W).

Late this afternoon I placed petals in each of the dishes again, as follows:



None of the animals was hungry, however, so none of the petals had been eaten by the time I left the office.

July 13 — When I arrived this morning I found (Y) completely empty, but all others

Mayhew 1962

July 13 UCR, Riverside Co., Calif.

contained all, or nearly all, the petals I had placed there the night before.

This afternoon I gave them a cafeteria as follows (Ⓑ = bronze-~~t~~ based *Gazania* ~~petals~~ petals with yellow tips):

Ⓨ Ⓦ Ⓗ Ⓞ Ⓑ (12 petals in each)

#1 went to Ⓞ first, then Ⓑ, then Ⓗ. #2 watched while #3 went Ⓞ first, then Ⓑ, then Ⓗ, then Ⓦ, then Ⓨ. It moved as it cleaned out each dish. (This was the first food they have had today.). The following petals remained at the end of the experiment:

Ⓨ - 0; Ⓦ - 3; Ⓗ - 0; Ⓞ - 0; Ⓑ - 1.

The experiment was repeated in the same manner, except the order of dishes was changed: Ⓞ Ⓗ Ⓨ Ⓦ Ⓑ.

This time #1 didn't eat, but #2 ate in this order: Ⓨ Ⓗ. #3 ate Ⓑ, Ⓨ, Ⓗ, Ⓞ. I didn't see anyone touch Ⓦ. However, when I counted remains at the end of the experiment, Ⓦ had only 9 petals. The others had: Ⓞ - 2; Ⓗ - 0; Ⓨ - 0; Ⓑ - 0.

I repeated the experiment with the dishes in this order: Ⓑ Ⓞ Ⓨ Ⓗ
Ⓦ

The animals were nearest Ⓦ. 12 petals were placed in each dish. #2 ate only from Ⓗ. #3 ate Ⓨ, then Ⓞ. Petals left were: Ⓑ - 9 (eaten by *Amphibolurus pictus*) Ⓞ - 7;

July 13 — UCR, Riverside Co., Calif.

(Y)-8; (H)-0; (W)-12. Then I repeated the experiment with 100 petals per dish, with the dishes arranged: (Y) (B) (H) (O) (W). #1 ate (Y), then (B), back to (Y), after which it returned to the rocks. A little later #2 ate (O) and #3 ate (Y). Fifteen minutes after the food had been placed in the cage the count was: (Y) - 9; (B)-33; (H)-~100; (O) - 7; (W)-~100.

July 16 — These animals were given a choice of mealworms in one dish & yellow Gazenia petals in another. #1 and #3 walked directly to the petals and began eating. #2, however, ran to the mealworm dish and quickly ate the 20 mealworms the dish contained. I repeated the experiment, with essentially the same results. #2 ate 9 of the 10 mealworms available before it left the food area. However, before it finished eating all the mealworms, it walked over to the other dish (#1 & 3 were eating there), went around the dish, then returned to the mealworms. When it had eaten 9 of the 10 worms available, it walked to the other end of the cage and sat beneath the heat lamp. The dishes had been placed in the reverse position for the second test. I repeated the test

Mayhew
1962

July 16 UCR, Riverside Co., Calif.

a third time, with the dishes returned to the original position. Only #1 & #3 ate this time, but both selected the yellow petals.

Aug. 1 #2 ignored the ants I put in the cage this morning. One crawled over its tail and hind legs without evoking any response from the lizard.

Aug. 3 Two cabbage butterflies (Colias eurytheme) were released into the cage today. #2 immediately took notice of the moving objects. It leaped off the rock pile and ran about 2 feet to where one of the butterflies was moving on the sand. It merely sniffed at the butterfly, then returned to the rock pile. Later one of the butterflies crawled up the rocks toward the lizards on top. #2 ignored it, but #3 moved over and sniffed at it. Finally the butterfly sat on the right front foot of #2, but it was ignored by both lizards. Later still, #3 chased one of the butterflies and bit at a wing. Apparently, it didn't like the taste, because it turned around and went back up to the rocks.

When I placed some Gazania petals (bronze) in the cage, #2 walked over with the other two lizards and

Aug. 3 UCR, Riverside Co., Calif.

munched voraciously on the petals. This is the first time I have seen it eat petals for several days. While #2 was still eating petals, I dropped 6 mealworms beside it. Usually it eats mealworms and ignores everything else. This time, however, it ignored the mealworms and continued to eat the petals. It ate only about ½ dozen mealworms early this morning, and ignored the rest that were dropped to it.

Lon McLanahan tried to get the adult kept in the greenhouse to eat mealworms today, but they were ignored. It simply walked away from the mealworms.

Aug. 7 These animals were offered yellow & orange petals in one dish, yellow blossoms (entire) in another dish, & orange blossoms (entire) in a third dish. #2 & #3 each sampled entire blossoms first, even though they had a very difficult time getting the petals off the heads. #3 ate at 3 heads before it went over & began eating petals from the other dish. Shortly, however, it returned to the blossoms. The color seemed to make no difference, but they obviously prefer blossoms to just petals.

Mayhew
1962

Aug. 13 UCR, Riverside Co., Calif.

When offered a choice between bronze & white *Gazania* petals, both #1 & #3 ate bronze petals. While they were eating these petals I placed some yellow petals beside them. Both of them immediately left the bronze petals & began eating yellow petals. Then #2 arrived & also chose yellow petals.

Nov. 13 I measured the illumination available to the captives today with a Weston Photometer. The light ranged from 31 to 460 foot-candles.

July 30 For about the last two weeks "Tubby" has refused to eat mealworms. It will grab an occasional worm in its mouth, then spit it out. However, it will eat *Gazania* petals whenever they are offered.

1968
May 24 UCR, Riverside Co., Calif.

This morning I released 10 lizards (3 adult ♂, 1 adult(?) ♂, 1 immature ♂, 4 adult ♀, 1 immature ♀) on a large rock pile near the southern boundary of the campus. They were released on the rock pile to which the north-west anchor for the police radio tower is attached. This is

Mayhew 1968

May 24 UCR, Riverside Co., Calif.

located near the south-west corner of the Botanical Garden. A large number of rocks occur on that particular hill-side. One can observe (with binoculars or spotting scope) this hill easily from another immediately to the west. Each animal had the middle toe on the right front foot removed before it was released.

These lizards were captured May 19, 1968 about 30 miles east of 29 Palms, San Bernardino Co., Calif.

1971

April 10 7 mi. N.E. of Yermo, San Bernardino Co., Calif.

James Auld collected 4 young animals at this location today and brought them back to UCR. They were measured and toe-clipped as follows:

#	age	sex	S-V (mm)
1	imm.	♀	126
2	imm.	♂(?)	155
3	juv.		77
4	imm.	♀(?)	138

These animals were released near the radio tower on the S. side of UCR on 26 April 1971 near where two of the 1968-released animals were seen on April 13, 1971.

Mayhew
1971

April 24 10 mi. E. of Newberry, San Bernardino Co., Calif.

Two emaciated ♀♀ were captured on the lava flow near the old highway. These two animals were returned to UCR and measured:

#	age	Sex	S-V (mm)
5	ad	♀	153
6	ad	♀	160

~~They were later released near the others on the UCR campus on~~

May 27 UCR, Riverside Co., Calif.

Dan Bamford and Tim White made a study of the imported U.C.R. population this spring. They were able to positively identify 5 of the original 10 releasees. Maximum displacement from release point of observed animals was about 100 yards. A marked ♂ + ♀ were observed mating on 13 May. No young, unmarked animals were found in the area. Strong territorial behavior was also seen 13 May, when the mated ♂ wrestled with, and drove off, a smaller ♂. *S. obesus* also displayed (push-ups) to *Sceloporus orcutti* at this location. Some feeding exptr. were conducted (plants taped to rock). Food preferences were shown for *Encelia farinosa* and *Eriophyllum*

May 27 UCR campus, Riverside Co., Calif.
confertiflorum flowers (both yellow), in the feeding experiments. Also eaten in wild: Erodium cicutarium, Cryptantha intermedia, Phacelia distans, Mirabilis laevis, Eucrypta chrysanthemifolia, Avena barbata, Scrophularia californica. These animals appeared to be much healthier than others seen in their natural environment near Pisgah Crater + 29 Palms this spring.

1979 April 25 UCR campus, Riverside Co., Calif.
Today Hanna Nadel (from Biological Control) brought in an animal she captured last Saturday (April 21). She caught it on campus on the hill with the radio tower on it. This animal was toe-clipped #4 as as immature animal and released on that same hillside April 10, 1971. It measured 138 mm. (S-V) then, but measures 175 mm. now — a gain of 37 mm. in 8 years (almost to the day). The animal was in a very healthy condition, based on its general appearance.

Scaphiopus couchi

Scaphiopus couchi

Scaphiopus couchi

Aug. 6

Glamis, Imperial Co., Calif.

Today "Ike" Harris wrote to me about finding a toad of this species in a cistern at Glamis that belongs to the Southern Pacific Railroad. They had been draining water from one cistern to another, and Ike had left the side door to the cistern open for the past two nights. He thinks that is the way the toad got in the cistern. He said one of the railroad section hands told him he (the section hand) had been hearing toads at night for several evenings ~~now~~ along the front of the quarters where the section hands live. There has been a runoff ditch (for overflow of the cistern) with some water in it for the past week. This runoff ditch runs past the 2 cisterns that are about 20 feet apart, and takes the overflow past a row of perennials that have been planted for shade near the buildings. The plants are Chilopsis linearis, Prosopis juliflora and a few Tamarix sp. None of the plants are over 15 feet high. I got the toad from "Ike".

Aug. 20 Glamis area, Imperial Co., Calif.

A thunderstorm occurred east of the Chocolate Mts. last Friday (Aug. 16), but we were just informed about it this afternoon. Most of the pools had dried up by the time we reached the area this evening. However, one damp area about 50 feet across and 2 small pools (about 3 feet across the widest spot) remained in one wash 16 miles N.E. of Glamis on the east side of the Chocolate Mts. (See Journal, pp. 33-36 for additional details).

Aug. 27 UCR, Riverside Co., Calif.

Some of the tadpoles we brought back from the Chocolate Mts. area last week are beginning to form legs. One of them has all 4 legs out today.

Aug. 28 The remaining tadpoles in the fish bowl were eating the one whose legs were exposed. One other one had its legs out this afternoon.

Aug. 29 The tadpoles had nearly completely consumed the legged animal by the time we arrived this morning. Two other tadpoles have also developed 4 legs. We are taking these animals out of the fish

Mayhew 1963 | Scaphiopus couchi | 2.

Aug. 29 UCR campus, Riverside Co., Calif.

bowls and placing them on moist sand in another bowl. These toads are being fed Drosophila adults (the tadpoles are being fed boiled lettuce and rolled oats). We thought we had two kinds of tadpoles, but Dave Reuther keyed them out — they both apparently are Scaphiopus couchi. They are just in two sizes.

Aug. 30 I divided up the tadpoles into two bowls so they wouldn't be so crowded, I let tap water stand 24 hours, then place some of this water in a new fish bowl and transfer some tadpoles.

Sept. 2 Some large tadpoles appeared in the new bowl. Now there are large ones in both bowls. The young frogs are being removed when all 4 legs are visible, even though the animals still progress primarily by vibrating the tail. These animals are placed in a fish bowl that contains water, but also has a wet sand pile above the water line on one side of the bowl. The young toads don't survive when left in H_2O.

about the survival of these toads near Glamis in the wrong way.

Mayhew
1963

Sept. 4 Glamis area, Imperial Co., Calif.

Lon McClanahan & I spent this afternoon and evening looking for places where this widespread storm might have left pools of water. However, we were unsuccessful in finding any.

Sept. 5 We searched for S. couchi habitat from Milpitas Wash, 12 mi. S. of Palo Verde, to Niland today. There are many washes east of the Chocolate Mts. that drain into Milpitas Wash, each of which appears to be suitable habitat for S. couchi. (The wash in which we found them Aug. 20 is one such tributary of Milpitas Wash). (See Journal, p. 38, for additional details). Several washes with rather lush vegetation (ironwood, palo verde) were found on the Ogilby - Blythe road south of the end of the pavement about 3-5 miles. We checked for suitable habitat near the Southern Pacific Railroad tracks from East Clyde to Niland. This close scrutiny of the terrain made it quite clear I have been thinking about the survival of these toads near Glamis in the wrong way.

Sept. 5

Glamis area, Imperial Co., Calif.

I have been thinking in terms of how the toads could survive in the region toward the Chocolate Mts. from around Glamis - Ogilby, when I should have been looking toward the Algodones Dunes to the west. Ike Harris said he heard most of the toads near East Clyde & West Clyde, and always on the west side of the tracks. In these two locations there is dense vegetation near the dunes. These plants (palo verde, ironwood) obtain sufficient moisture from rainfall runoff that is dammed by the dunes. The washes that drain into the dunes at East Clyde, West Clyde, and Ruthven drain a considerable area to the east. Thus, rather large amounts of water can flow here at times, even though these washes don't drain any large hilly areas. The vegetation becomes more scattered and smaller as one progresses north along the dunes, even though the washes drain the western slopes of the Chocolate Mts. from about Glamis north. Since most of the summer storms reach the area from the

Mayhew 1963

Scaphiopus couchi

Sept. 5

Glamis area, Imperial Co., Calif.

southeast, most of the rain apparently falls before the storms reach the more northerly areas. This is certainly indicated by the condition of the vegetation. Evidently the only toads one finds at Glamis & slightly north are those that have found sufficient vegetation in the washes to permit the toads to move away from the dune area. It appears that the toads I found at and near Glamis in 1961 were at the ragged edge of S. couchi distribution, although the vegetation in some of the washes all the way to Amos look as though S. couchi might be able to survive there, we found no toads or tadpoles from Amos north, even though big pools were present at Amos and Regina. Perhaps these washes don't carry water often enough to maintain a toad population (it has been two years since the washes north of Glamis, to near Amos, have carried water during the summer). Therefore, it appears the toads will not be found very much to the north of Glamis.

Sept. 5 Glamis area, Imperial Co., Calif.

Ike Harris checked the pools at Amos and Regina Aug. 30 without finding a trace of S. couchi, either as adults or tadpoles.

Sept. 6 UCR campus, Riverside Co., Calif.

Each time I have separated the large tadpoles from the small, some large ones develop in the bowl that contains the small ones. Consequently, today I selected 20 tadpoles of a uniform size (selected by eye) & placed them in a new bowl. These animals are going to be followed closely from now on. The young toads that are on moist sand were measured today. They are all approximately 1 cm. long (S-V), ranging from 9 to 11 mm. These are toads that have just lost their tails.

Sept. 9 I found 4 large tadpoles in the bowl of "20" this morning. These have been placed in another bowl. Several of the others (4) are somewhat larger than the remaining ones.

I now have 9 toads in the terrarium of moist sand (5 placed there Friday, Sept. 6, 4 others placed there this morning). One other toad is out of the water in the bowl that

Mayhew
1963

Scaphiopus couchi

Sept. 9 — UCR campus, Riverside Co., Calif.

contains water & sand. However, its tail is still fairly long, so I won't put it in the terrarium until tomorrow.

Sept. 16 — At least 2 of the young toads have now buried in the sand in the aquarium (terrarium). However, I can't locate (with my eyes) the spots at which they buried.

Sept. 17 — Three of the young toads are buried today. They all seem to be in one corner of the terrarium. One of the 5 that were separated from the "20" bowl now has front legs, as does one from the "concentrated" bowl. The rest of the 5 from the "20" bowl all have hind legs now. Six in the "20" bowl now are large and have hind legs. They were separated today into another bowl. about 6 in the "concentration" bowl now have hind legs (the exact number is difficult to determine at this time because of all the bodies milling around — they will be separated and counted tomorrow when I have enough standing tap water available [must stand for 24 hours]). approx. 8 tadpoles in this bowl are as

Sept. 17 | UCR campus, Riverside Co., Calif.

large as the 5 that were separated from the "20" bowl. One runt (~5mm S-V), about 1/3 as large as the next smallest tadpole of the "concentration" group (or any group), was separated this morning into a bowl of its own. No toads have metamorphosed since Sept. 9. However, 2 should be ready to transfer to the terrarium by tomorrow or the next day.

Glamis → Today I received another letter from "Ike" Harris, informing me he found another toad the afternoon of Sept. 12th. This toad was found at "Ike's" back step. This particular location is enclosed with 2"x6"'s, and had been originally used as a planter. However, "Ike's" German Shepard has recently claimed it to lie in, so they have been keeping this spot damp for the dog. "Ike's" son found the toad while he was smoothing the ground and wetting it down. "Ike's" wife had filled this area with water several days earlier. Since she forgot the hose was running, she really flooded

Sept. 17 Glamis, Imperial Co., Calif.

that spot. Consequently, this enclosure has been very damp for several days. "Ike" said that if this toad did any calling the past few nights, they didn't hear it. However, he said they have been keeping the cooler running all night the last few nights, so it would have been very difficult for them to hear anything outside the house.

Three of us left for Glamis at 2145 tonight when word came that rain had fallen there. We collected 17 adults while we were there. (See pp. 39-43 of Journal for details).

Sept. 18 UCR, Riverside Co., Calif.

By the time we reached UCR, 3 of the 4 pairs had laid eggs. By 1330, when the eggs were examined, many were already ~~in~~ 2-cell stage.

Sept. 19 By 1145 many of the eggs had reached the neurula stage. Two toads were transferred from the "sand/H2O" bowl to the terrarium. ~~Three~~ of the "5 from 20" bowl and 1 of the "6 from 20" bowl now have front legs. These were transferred to the "sand/H2O" bowl. Three in the "concentrated" bowl also have front legs,

Sept. 19 | UCR, Riverside Co., Calif.

and 2 were transferred to "sand/H_2O," 1 to the terrarium. There are now 13 in the terrarium.

Sept. 21 (at 1300) | The new tadpoles now have their mouths open, and the ~~egg~~ eyes and gills are visible. They are just beginning to feed on the rolled oats I provided them. The last tadpole in the "5 of 20" bowl now has front legs, so it was transferred to the "sand/H_2O" bowl. Two other toads were placed in the terrarium.

None of the eggs that were laid Sept. 19th have developed beyond stage 28 of Rugh (Lab. Manual of Vertebrate Embryology, 1957). Even though these eggs were produced by 3 different ♀♀ in 3 separate containers, and the eggs were placed in 7 different bowls, all the eggs stopped development at approximately the same stage. The number of eggs in each bowl was approximately the same as I had placed in the bowls from the original laying (Sept. 18). In fact, 2 of the bowls with Sept. 19 eggs had fewer eggs than any of the Sept. 18 bowls. Nevertheless, none of the Sept. 19 eggs lived more than

Sept. 21 UCR, Riverside Co., Calif.

a few hours. These eggs were kept in the same water the adults had been collected in. Either a reduced oxygen tension, sufficient to kill the eggs occurred, or perhaps some inhibitor was produced by the developing eggs the day before to stop development of any subsequent eggs that ~~might~~ be laid.

Sept. 23 Some of the new tadpoles already are noticeably larger than the rest in several of the bowls. At 0930 today the one pair of adults that had not produced any eggs (from 16 mi. N.E. of Glamis) were separated. The ♂ had maintained amplexus the entire time. These animals were captured while in amplexus at 0700 Sept. 18. We could see eggs through the abdominal wall of the ♀, but she didn't seem to have very many eggs in her. I feel she probably laid most of her eggs during the rain storm of Aug. 16th, and simply did not possess eggs ripe enough to be deposited this time.

Sept. 24 Glamis area, Imperial Co., Calif.

Lon McClanahan, Lloyd Tevis & I took the 17 toads we had captured

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Sept. 24

Glamis area, Imperial Co., Calif.

on Sept. 18 back to Purgatory Wash (6 mi. E. of Glamis) and released them. (This wash is just east of Saylor's shack, + the first wash east of Gold Hill.) These animals were released singly or in pairs, and observed until they buried themselves. The 1st animal was released at 0515, the last at 0640. All were buried by 0725. Eight of the toads buried near a fairly dense ironwood tree (*Olneya tesota*), 2 each buried beneath debris under 2 dead palo verde (*Cercidium floridum*), 1 crawled beneath a log, 1 buried in dry sand near the spot where the pool had been located at the time of their collection, 2 buried beneath separate live palo verde, and 1 escaped before we could see it bury. One of these animals, released within 10 feet of a wash bank that contained overhanging vegetation, hopped approximately 100 feet across the wash (in a direct line), climbed a steep bank about 3 feet high, and buried beneath the aforementioned ironwood. The total time elapsed from release to total submergence was 15 minutes (0530 to 0545). The toad that buried in dry sand in the bottom of

Sept. 24 Glamis area, Imperial Co., Calif.

the wash was within 4 feet of the pool site where several toads had been captured. The bottom of this depression was still damp, but no water remained on the surface. Several toads were released on this moist spot, but none of them attempted to dig there. One that was released at this moist location (at 0625) immediately began hopping toward an ironwood tree and went under a log near the tree's base (at 0635). The log was 35 feet from the former pool.

Two were released in the middle of the wash to see where they would go. One disappeared in a couple of minutes while still out in the wash, and we never did locate it again. The other one also disappeared, but we found it again shortly. It eventually buried beneath debris under a palo verde (live). These animals were released at 0640, and the remaining one was not fully submerged until 0725.

After all the toads were buried and their sites marked (stake with orange paint at the top), we checked several washes to see if any pools

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Sept. 24 Glamis area, Imperial Co., Calif.

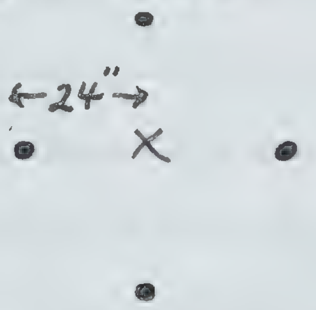
containing tadpoles still existed. We drove as far northeast of Glamis as Milpitas Wash. We saw several pools of water near the road in very barren areas, but these contained no tadpoles. No pools were found in any of the washes. We finally found a pool that contained tadpoles near the Algodones Dunes at West Clyde (7 mi. S.E. of Glamis). The pool didn't appear to be deep enough to last more than another day or two at the most. However, the tadpoles already were quite large. In fact, they are about 2 times as large as the ones in the laboratory that are the same age (Glamis — .4 cc. volume, 13 mm in body length, 28 mm. total length; laboratory — .2 cc. volume, 6 mm. in body length, 15 mm. total length). Everett Van der Poel (at Glamis) told me he saw tadpoles in a pool against the dunes 6 miles N.W. of Glamis yesterday. Thus, it appears that the toads occur near the Algodones Dunes for a considerable distance.

Ike Harris released the toad he had maintained in captivity. He released it at 1300 on Sunday (Sept. 22), and

Scaphiopus couchi

Sept. 24 — Glamis area, Imperial Co., Calif.

watched to see what it would do. A period of 30 minutes passed between its release and complete submergence. It buried in the open in a drainage ditch between the 2 cisterns. It is 30 inches N.W. of a desert willow (*Chilopsis linearis*) and about 40 inches S.E. from a cactus of some sort. I've placed metal stakes on 4 sides, 24 inches from the animal:



Sept. 25 — UCR, Riverside Co., Calif.

All the metamorphosed toads that are still alive (13) were placed in a larger terrarium today. I checked all the bowls that contain new tadpoles today & eliminated the dead ones. In all, 354 remain:

♀ 16-1	, bowl #	5 — 36
" 16-1	"	5 — 52
" 16-1	"	6 — 39
" 16-1	"	6 — 47
" 16-1	"	7 — 41
" 16-1	"	7 — 42
" 6-1	"	1 — 26
" 6-2	"	4 — 33
" 6-2	"	3 — 38

Mayhew
1963

Sept. 25 UCR, Riverside Co., Calif.

There are still 20 tadpoles in the "conc." bowl, 3 in the "6/20" bowl, and 8 in the "20" bowl. These are from the Aug. 16 rain.

Sept. 27 Today 5 new toads were transferred to the terrarium (18 in all now). One of these was from the "conc." bowl, and 2 each from the "5/20" and "6/20" bowls. One from "conc." bowl also was transferred to "sand / H_2O."

In checking the data I gathered when the last batch of tadpoles was beginning development, I found some rather interesting observations. At approximately stage 28 of Rugh a tiny capsule became visible around the developing embryo within the egg capsule. At about stage 31 the egg capsules ruptured at the outer end, and a neat, circular hole was produced. The embryo, encased in the tiny capsule, then left the egg capsule by way of this hole, but was still attached to the egg capsule by a sticky material. By about stage 43 the larvae escaped from the second capsule, but remained anchored to the capsule at the mouth.

Sept. 30 — UCR, Riverside Co., Calif.

Today 2 of the "6/20" bowl animals, 1 from the "20" bowl, and 1 from the "conc" bowl were transferred to "sand/H_2O" bowl. This is the last of the "6/20" bowl and the "conc" bowl. Now only 5 tadpoles are left in the "20" bowl.

Oct. 1 — This morning I selected the 10 largest tadpoles from the Sept. 18 batch and separated them from the others. They average 10 mm. S-V length, 25 mm. over-all length. At the same time I selected 10 of the smallest ones from the same age group and isolated them (6 mm. S-V length, 13 mm. over-all length). The small group is now exposed to 11 hours of heat from one 250 watt infra-red heat lamp whereas the other bowl is being maintained at room temp. (24 °C.). I plan to raise the water temp. in the "small" bowl to about 35 °C. By noon the water temp. in the heated bowl reached 34 °C. It remained at that level until 1600. At that time all but one of the tadpoles was dead, and the remaining one was very inactive.

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Scaphiopus couchi

Oct. 2 UCR, Riverside Co., Calif.

Hind legs are now visible on all 10 of the large tadpoles I separated from the rest yesterday. Hind legs are also visible on some of the others in the concentrated bowls.

Oct. 4 The largest of the Sept. 18 tadpoles have now become as large and as well-developed as the last 3 Aug. 16 tadpoles I have.

Oct. 7 Two of the largest Sept. 18 tadpoles now possess 4 legs. Several others have hind legs, & front legs are nearly ready to emerge. Most all the tadpoles (Sept. 18) now have hind legs, even in the crowded bowls. A few of the smallest animals in the most crowded bowl do not, however.

Oct. 8 This morning 6 more of the largest Sept. 18 tadpoles were transferred to the "sand/H_2O" bowl. However, several others from crowded bowls also were transferred. The single tadpole ~~from~~ in bowl #1 is considerably larger than most of the others, but it hasn't developed its front legs yet.

Oct. 14 Glamis area, Imperial Co., Calif.

An unsuccessful attempt to dig up some toads was made today (see Journal, pp. 44-45).

Oct. 16 UCR, Riverside Co., Calif.
The last tadpole from the group that was collected in august metamorphosed today.

Oct. 18 Glamis area, Imperial Co., Calif.
Lloyd Tevis, Peter allen, Dennis Miller & I spent the afternoon looking for sites where S. couchi would be apt to be active tonight. It had rained 0.5" between sundown yesterday & 0800 this morning. "Ike" Harris told me several of the washes between Glamis and Ogilby were flowing last night. Saylor drew a map for me to find a natural pot-hole where water often stood after rains. It was in Purgatory Wash, about 1 mile north of the spot where we had released the toads on Sept. 24th. We found large tadpoles in the pool, which meant the pool had contained water from the rain Sept. 17th. Lots of newly emerged Bufo punctatus were found in the vicinity of this waterhole. A number of them were collected and returned to the laboratory. A couple of dozen of them were found in the bottom of an old mining

Oct. 18

Glamis area, Imperial Co., Calif.

venture. This hole went straight down for 7 feet. The waterhole at this site (no water in the mining hole) was in a rocky area at one side of the main channel of Purgatory Wash. There was very little vegetation around the waterhole. No water was standing in the sandy pool near which we had released the toads Sept. 24th. Then we drove 8 miles S.E. of Glamis to East Clyde, crossed the Southern Pacific tracks, and drove to the east edge of the dunes at West Clyde. This was the site at which we had found the standing water and the tadpoles Sept. 24th. No water remained at this location, but the soil was still very moist. Grass was very thick here now, and was about 6" high. It began to rain while we were at this location, so we started back for the road immediately. The ground was nearly saturated from the previous rains, so the water began to pool almost at once. Consequently, we had rather a wild ride getting back to the road.

(pool still was ~15 ft. wide + 25 ft. long.)

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1963

Scaphiopus couchi

Oct. 18

Glamis area, Imperial Co., Calif.

(2 mi. S.E. of Glamis)

By the time we reached the road (on the dune side of the S.P. tracks) several of the washes were beginning to flow. We kept track of which washes were carrying the most water, so we would be able to go to the spot near the dunes that had the greatest likelyhood of having pools of standing water. Two washes - at bridges 700.35 and 700.11 — seemed to carry the largest volume of water. I checked my rain gauge at the Glamis store when we reached that point (it had stopped raining by then), and found that 0.12 inch fell that afternoon. After eating, we returned to Purgatory Wash to see if any S. couchi had emerged (it was now dark). Purgatory Wash was flowing, & the sandy pool near which we had released the toads Sept. 24th was again full of water. However, there was no sign of any toads. The air temperature at the time was 17.8°C. No wind was blowing, and no moon was visible.

Mayhew
1963

Oct. 18

Glamis area, Imperial Co., Calif.

We then drove to the newly found pool that contained the tadpoles this afternoon. I collected some of these to take back to the laboratory. No S. couchi were found here either. One adult Bufo punctatus was found in the mine hole I mentioned earlier, but that was the only adult amphibian that was seen. We then drove to the wash near Buzzard's Peak (16 mi. N.E. of Glamis). Water was flowing in this wash when we arrived. We searched the area over for a considerable distance on each side of the road without finding any S. couchi. In fact, we covered more territory this time than we had at any other time. Just before we left the area we found a single sub-adult female. However, it appeared rather obvious that no breeding would occur in pools formed ~~in~~ this storm.

Next we returned to Purgatory Wash to see if some animals might emerge at a later time. However, no sign of any S. couchi could be found. We then camped beside the S.P. tracks

Oct. 18 Glamis area, Imperial Co., Calif.
between bridges 700.11 and 700.35. No more rain fell during the night. The minimum temperature (air) tonight was 12.2°C.

Oct. 19 This morning we drove down the wash at bridge 700.35 until we were as close as we could drive to the sand dunes. We had been out of the carry-all about 5 minutes when Lloyd found a newly hatched S. couchi on the ground. The spot was covered with grass, and was still quite damp. The ground became more and more moist as we approached the dunes. Then we found the first pool of water. Some additional young S. couchi were found on the mud near the pool. The pool contained a great many fairy shrimp (adults), and the mud around the pool had large cracks over 1/2" deep in it, both of which indicated this water had been here since the Sept. 17 storm. The 0.62" of rain in this storm had contributed little or nothing to the pool. When I climbed a near-by sand dune I found another pool right up against the dune. This was the most

(Thamnocephalus platyurus) → [fairy shrimp]

Oct. 19 | Glamis area, Imperial Co., Calif.

distant point to which the water had progressed. This pool had been over 6 feet deep at one time, judging by the water mark on the side of the sand dune. The water was only about 2 feet deep now, and lots of fairy shrimps were present in it. The muddy area around these pools indicated a pond over 1/4 mile long and approximately 50 yards wide had been there after the Sept. 17 storm. There were only a few scattered palo verde around these pools, none of which was over 10 feet high. Ground cover was almost non-existent at this site. From the top of the dune, it was obvious that both the washes (700.11 & 700.35) where so much water had been flowing the night before joined together near the dunes and sent their water to this location. However, the area that contained the pools appeared to be a small side channel, and most of the water must have gone around a spur of the sand dune into a larger low spot to the northwest. Lots of large palo verde and ironwoods could be

Mayhew
1963

Oct. 19 Glamis area, Imperial Co., Calif.

seen at that location from the top of the dune. The two wet areas were about 1/2 mile apart. We decided to go to the other area by walking over the top of the intervening dunes. at the very top of the dune - at least 1/4 mile from the nearest water and over 100 feet above the water level - Dennis found 2 young S. couchi hopping over the sand. There was no vegetation of any kind at this location. These animals apparently were dispersing from one of the pools. The other wet area had had pools of water standing for a long time, judging from the muddy condition of the soil. However, no pools of water could be found at this location. Nevertheless, we found some more young S. couchi in the grass at this site, indicating this species had been successful in reproducing at this location in the Sept. stormwaters. In all, we caught 8 young S. couchi, including the 2 on the top of the dunes, and brought them back to the laboratory. I

(These 2 found at 0800)

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1963

Oct. 19

Glamis area, Imperial Co., Calif.

am going to keep 4 of them and give the remainder to Lon McClanahan for his study. The last one was found at 0900.

After leaving the dunes, we returned to Glamis for breakfast. Then we drove northwest of Glamis to look at a bridge by which an adult S. couchi was found early this week by a railroad crew. This was bridge 692.06 (Glamis - 698.20), so we were about 6 miles northwest of Glamis. This is the farthest north that I have found S. couchi, or have heard of one being found. However, this site is upstream in one of the washes that leads to a very lush area at the edge of the dunes. Walt Moberly & I investigated that site in Sept. 1961. At any rate, this toad was found in the hole these workmen had dug beneath the bridge. The hole was about 8 feet deep when the toad was found, but it could have been disturbed at some other level and simply fell to the bottom. The toad was found on the third day after the excavation was begun. All we can say for sure is that S. couchi has

Mayhew
1963

Scaphiopus couchi

Oct. 19 Glamis area, Imperial Co., Calif.

been found buried beneath a railroad bridge 6 miles northwest of Glamis.

Oct. 22 UCR, Riverside Co., Calif.

This morning I measured the 4 young S. couchi I kept from our recent trip. The measurements were:

	Length (mm): S-V	Weight (gms)
#1	21	0.9
#3	21	0.8
#2	18	0.6
#4	17	0.5

Nov. 8 After a lag of several days, another tadpole metamorphosed today. There are still 8 tadpoles left from the eggs that were laid 18 Sept. 1963. Some of these, however, do not appear to be sufficiently healthy to undergo metamorphosis. I have lost most of the toads that developed from these eggs. They appear to metamorphose while they are much smaller than the same species in the field. Consequently, they aren't able to take care of themselves after they become small toads. Once a critical size is passed, though, then they grow quite rapidly. The young toads

Nov. 8 UCR, Riverside Co., Calif.
that were obtained at the Algodones Dunes in October are beginning to eat mealworms now. They appear to be nearly twice the size they were when captured in October.

Nov. 11 Two more tadpoles metamorphosed today. There are only 4 tadpoles left.

Nov. 15 Another tadpole metamorphosed today.

Nov. 19 Another tadpole metamorphosed today.

Nov. 26 Another tadpole metamorphosed today. Measurements of the 3 young field toads are:

#1	36 mm (S-V length)	6.0 gms.
#2	30 "	3.5 "
#3	32 "	4.0 "

Nov. 30 The last tadpole metamorphosed today.

Dec. 26 I measured the 3 remaining toads that were collected in the dunes in October. Their measurements:

#1	42 mm (S-V length)	10.2 gms.
#2	35 "	5.7 "
#3	37 "	5.8 "

All the toads that metamorphosed in the laboratory have long since died. They appeared to metamorphose at too small a size to be able to survive successfully. Before death, most of them developed a large swollen pouch on the throat. They usually died a day or two following this formation. These toads were

Dec. 26 UCR, Riverside Co., Calif.

rarely over 5 mm S-V length. They were smaller at metamorphosis than the tadpoles I collected in the field a week after the rain (September). Something was lacking to get the tadpoles to grow large enough before metamorphosis to insure survival of the young toads.

Jan. 24 The 3 young captives were weighed and measured today. The results:

#1	47 mm (S-V length)	14.2 gms.
#2	37 " "	5.9 "
#3	41 " "	8.6 "

1965

Jan. 29 6 mi. N.W. of Glamis, Imperial Co., Calif.

Rudy Ruibal, Ted Pengelley, Eric Edney, Irwin Ting, Boyd Strain, Lloyd Tevis, Mark Ryan, Lon McClanahan, Al Bennett & I ~~[illegible]~~ examined to eastern dune edge for likely toad locations. We left the road beside the railroad at bridge # 692.25, which took us to a lush region at the edge of the dunes. However, we found conditions had been somewhat more lush slightly northwest. This area can be reached by leaving the road at bridge # 690.14. This bridge is approximately 400 yards NW of 2 train signals and a railroad shed

Mayhew 1965

Scaphiopus couchi

Jan. 29 — 6 mi. N.W. of Glamis, Imperial Co., Calif.
(small ~~[illegible]~~ sentinel-like cement structure). From a distance, it appears to be another signal for trains.

1978 Oct. 23 — Glamis area, Imperial Co., Calif.

Tonight it rained off and on all evening. There were still ponds beside the road from the rains that fell last Friday & Saturday (Oct. 20+21). I drove the road (Highway 78) from the Highline Canal to the turn-off to Ogilby (12 mi. E. of Glamis) and returned. Pools were beside the road to the Ogilby Road. No toads were heard calling at any of the pools, nor were any animals seen at any of the pools. However, I did find live toads (3) or DOR toads (12) on the road. Most were small, young animals, but a couple appeared to be adult. During the one round trip (between 1830 and 2130) I found the following animals:

6 – 2 mi. West of Glamis
7 – 1 " " "
1 – 3 " east "
1 – 4 " " "

One *Bufo punctatus* (DOR) was found 6 mi. east of Glamis.

Sceloporus
graciosus

Sceloporus
graciosus

Mayhew
1958

Sceloporus graciosus

July 1

Univ. Calif., Riverside, Riverside Co., Calif.

This evening at 5:30 P.M. one of the animals caught near Idyllwild, Riverside Co., Calif. on June 11, 1958 was starting to lay eggs. In all, 5 eggs were laid by 6:45 P.M. (these proved to be the last ones). They were placed in a bare Petri dish immediately and set in the Vapor-temp. They were incubated at 90°F. and 85% relative humidity.

July 2 The eggs appeared to be dessicating, so the relative humidity was raised to 92% while the temperature was held at 90°F.

July 3 This morning the eggs look like dried prunes. One of them is completely collapsed. Two of them have a thin dirt film over them, & they don't seem to be quite as dessicated as the others.

At 7 P.M. 3 more eggs had been laid, so these were placed on damp soil in a Petri dish & placed in the Vapor-temp at 90°F. & 92% relative humidity.

July 5 The 5 eggs set July 1 were opened this morning. They had dessicated so much they looked like old prunes. Mold was beginning to form over them. Each of them showed signs that development of the embryo had

July 5 | Univ. Calif., Riverside, Riverside Co., Calif.

begun. All of them showed evidence that the embryos had proceeded to the blood-forming stage. The yolk & embryonic remains were so dry, however, no details of the embryos were detectable. One embryo, a little better preserved than the rest, measured 3 mm. in length — at least, that was the dimension of the embryonic portion of the egg. The 3 eggs set July 3 on damp sand show no signs of desication at this time. They have now been under incubation for approximately 48 hours.

July 7 — This morning 5 more eggs were set on damp soil in the Vapor-temp. All are being incubated at 90°F. & 92% R.H.

July 15 — One of the eggs set July 3 was covered with mold and rather shrunken, so it was opened today. The yolk was still runny. No trace of an embryo could be found.

July 16 — Five eggs were measured today. The measurements were (in mm.):

15 X 9.4
15 X 9
14.6 X 9.7
14.7 X 10
15.5 X 9.2

The average measurements were: 15 X 9.5.

July 18 UCR campus, Riverside Co., Calif.

This afternoon at 1600 another 4 eggs were found. From their appearance, they had just been laid a short time before.

Aug. 10 This morning Frank Awbrey entered the lab. when the last egg of the clutch set July 7 was in the process of hatching. The following are the notes he recorded at the time:

"At 1035 the last *graciosus* egg remaining in clutch #3 had a hatchling lizard with its head protruding. Feeble movements were noted. I removed the [Petri] dish from the Vapor-temp in order to observe the emergence. Emergence from the shell was very slow with only an occasional strong movement from side to side by the lizard. At 1045 a sudden forward surge freed the front legs. Now the lizard lay on its side breathing heavily but making no other movements until 1049 when it turned upright suddenly freeing the body up to the hind legs. At 1056 the hatchling appeared to be very alert, holding its head up and peering around. Another movement was made but the hind legs were still imprisoned. At this point the hatchling began to wriggle and turned

Aug. 10 UCR campus, Riverside Co., Calif.

completely over. At 1100 one hind leg was freed after a series of violent movements. At 1103 the other hind leg was freed. At 1104 only the tail remains in the shell. The hatchling is very alert and active. It runs dragging the shell after it. At 1107 it jumped out of the Petri dish. The tail was still in the shell but the lizard ran about a foot across the desk top. There appears to be an attachment from the yolk sac still running from the navel back into the shell. Upon closer examination I can see that there is still a sizable bit of yolk attached to the hatchling. Emergence complete at 1114, but the shell is still attached to the lizard by the yolk sac. I pulled the remaining yolk sac out of the shell. The stalk is 14 mm. long, the lizard is 23 mm. long."

Aug. 14 A ♂ & a ♀ were autopsied to learn the reproductive condition of the animals caught at Glacier Campground on Mt. Baldy Aug. 1 (5475 feet elevation). Right testis of male measured 2.5 mm. x 4 mm.; left testis 3 mm. x 4.5 mm. Right ovary of ♀ was missing; left ovary contained 6 ova ranging from 1 mm. to 1.75 mm. in diameter.

Mayhew 1958

Aug. 16 Barton Flats, San Bernardino Co., Calif.

Warren Gross brought in 6 specimens from this area (Barton Flats Public Campground [Sperry cabin] on south fork of Santa Ana River). This is near the University Campground at about 6500 feet elevation. He said several were obviously gravid when caught, but some had escaped. One was dead on arrival, so I opened it to check its reproductive condition. The reproductive organs were slightly spoiled, but I counted 4 ova in the right ovary, ranging from 1.5 mm. to 1.75 mm., and 3 ova in the left ovary in the same size range.

Aug. 26 5 mi. N. of Idyllwild, Riverside Co., Calif.

Several specimens were collected this afternoon in the coniferous forest just east of the highway.

Sept. 10 Barton Flats area, San Bernardino Co., Calif.

At the entrance to the San Gorgonio Wilderness Area we caught one adult ♂ and several other adults. The first lizards were seen about 1145 when the air temp. was 22.2°C. (72°F.) and the soil surface temp. was 33.8°C. (92.9°F.). This spot is about 8000 feet in elevation. Later we captured a juvenal on the road near Jenks Lake (about 7000 feet).

Sept. 20 5 mi. N. of Idyllwild, Riverside Co., Calif.

A few adults were captured this

Mayhew
1958

Sept. 20 5 mi. N. of Idyllwild, Riverside Co., Calif.

afternoon. The area in which we captured this animals last month is now thoroughly posted, so we had to use a much inferior spot to look for animals. Very few were active at this time in the afternoon (1515 to 1600). At this time the air temp. was 24°C., surface temp. (shade) was 24.8°C. and surface temp. (sun) was 40.6°C.

Oct. 10 South Fork campgd., Barton Flats, S. Bernard. Co., Calif.

Although specimens of this species have been caught by us in this immediate vicinity, none were even seen today. Specimens of 2 other species were captured, however. The air temp. at 1330 was 23°C. under beautifully clear skies. (*S. occidentalis* was active here.)

San Gorgonio Wilderness Area, S. Bernard. Co., Calif.

One juvenal was all we saw at this location this afternoon. At this time the air temp. was 19°C. (66°F.) (time was 1530). (The altitude here is 7650 feet). No other reptiles of any kind were seen at this location today.

1959

May 17 Barton Flats area, San Bernardino Co., Calif.

This morning by 0850 young animals were seen running about on logs along the stream bank in South

May 17 Barton Flats area, San Bernardino Co., Calif.

Fork campground. Adults were seen a few moments later. A number of both ages were captured during the morning. One of the adult ♀ already had developed the red color on head + sides that usually denotes the breeding period. These animals seemed to be quite abundant at this locality today. We also found them quite numerous at 7800-8000 ft. in the San Gorgonio Wilderness area. Several ♂ + ♀ were captured here to compare their reproductive condition with the animals captured earlier in the day at 6300 ft. They were active when we reached this area, and a few were still active when we stopped looking at 1520, even though a fairly strong breeze was blowing.

Sept. 6 South Fork campgd., Barton Flats, San Bernardino Co., Calif.

Numerous lizards were seen along the road this afternoon. I started looking at 1500. The last lizard was seen at 1700. At this time the weather conditions were as follows: (2 newly hatched animals seen this afternoon)

air temp (30") – 22.6°C.
" " (1 cm) – 24.0°C.
soil surface temp. – 29.0°C.

The wind was blowing 3-5 mph. from the N.W. There were no clouds. Sunset occurred in this location about 1720.

Oct. 17 | South Fork campgd., Barton Flats, San Bernardino Co., Calif.

I looked for lizards from 1130 to 1205 today. Eight juvenals were seen, but no adults. The weather was perfect:— air temp (30") - 25.6°C., no clouds, S.E. wind 3-5 mph.

1962

June 3 | UCR, Riverside Co., Calif.

Adult ♂♂ collected in the San Jacinto Mts. (6000 to 6800 ft elevation) can be in potentially breeding condition without possessing the large rust-colored patches on the sides of the head and body. All of the ♀♀ with eggs in the oviduct, however, possessed the rust-colored spots. Several ♂♂ also contained the rusty spots, but testes sizes and condition of the vas deferens were indistinguishable from ♂♂ lacking the rusty spots.

June 28 | Much less rust was seen on the animals caught in the San Gabriel Mts. the last couple of days than was found on the San Jacinto Mts. sample earlier this month. Although some of the ♂♂ in the San Gabriel sample appeared to be approaching the end of the breeding season, most of them still have lots of motile sperm in the vas deferens. The vas deferens was still quite milky in almost every animal, but the number of

June 28 UCR, Riverside Co., Calif.

motile sperm was greatly reduced in several. Lots of non-motile sperm were seen on the microscope slides. Most of the ♂ S. occidentalis collected in the same location appeared to be near the end of the breeding season already.

Nov. 3 Mt. Palomar State Park, San Diego Co., Calif.

No adults were seen today, but several juveniles (6) were seen between 0945 and 1030. None of them were captured. They were seen sunning themselves on rocks that were present beneath Quercus chrysolepis. at 1120 one juvenile ♂ was captured and released. It measured 32 mm. in S-V length. The elevation here is 5000 ft.

1963

April 24 San Jacinto Mts., Riverside Co., Calif.

Several immature animals were captured, measured, + released at 5850 feet elevation today. They were:

Time	Sex	S-V (mm)	Time	Sex	S-V (mm)
1300	♂	28	1555	♂	31
1500	♂	40	1555	♀	34
1500	♀	29			
1505	♀	31			
1505	♀	33			

Mayhew
1963

May 18 — Black Mt. campground, Riverside Co., Calif.

In addition to adults captured for reproductive cycle analysis, the following animal was caught, measured and released:

imm ♂ — 37 mm (S-V)

May 19 — Lake Fulmor, Riverside Co., Calif.

The following young animals were caught, measured, and released:

♂ — 35 mm (S-V)
♂ — 32 " "
♀ — 34 " "

July 17 — UCR, Riverside Co., Calif.

The samples of lizards captured the past two days were dissected today. There was considerable difference in the reproductive condition of the animals from the two mountain ranges, even though both groups had been collected at 6300 feet elevation. Breeding colors (rust) had disappeared from the San Bernardino Mts. group, whereas the San Jacinto Mts. lizards usually contained the bright rust along the head & sides — particularly the ♀♀. The testes of most San Berdoo animals were about ½ the size of most San Jacinto lizards. Testes of San Berdoo males were quite flaccid when compared to San Jacinto males.

Mayhew 1963

July 17 — UCR, Riverside Co., Calif.

About ½ the adult ♂♂ from Barton Flats still contained sperm in the vas deferens, whereas all the Pine Cove ♂♂ contained sperm yet. No enlarged eggs in ovaries or eggs in oviducts were found in Barton Flats ♀♀. Only a couple of these ♀♀ contained anything that resembled corpora lutea. On the other hand, Pine Cove ♀♀ appeared to be near the height of their breeding season. Of 10 adult ♀♀ dissected, 3 contained eggs in the oviduct, and 5 contained large, yellow eggs that would be released to the oviducts shortly. Two others contained fresh corpora lutea.

July 18 — This afternoon we dissected the lizards we collected this morning in the Big Pine – Blue Ridge portion of the San Gabriel Mts. These animals appeared to be somewhat between the San Jacinto and San Bernardino Mts. groups reproductively. A total of 11 adult ♂♂ and 16 adult ♀♀ were dissected today. Of these ♂♂, 8 had sperm in the vas deferens yet. The testes volumes of these ♂♂ were still about as large as the San Jacinto ♂♂.

July 18 UCR, Riverside Co., Calif.

Four of the females had eggs in the oviducts and one other still contained corpora lutea. None of them, however, contained enlarged eggs in the ovaries that were not quite ready to be released. Instead, 3 of them contained atretic ova in the ovaries— they were still rather large & bright yellow, but they had become quite flaccid.

Aug. 12 The lizards I caught at Pine Cove yesterday were dissected today. The breeding season apparently has been completed for a while. No ♀♀ had yellow or enlarged eggs in the ovaries, nor did any of them have eggs in the oviducts. None of the ♂♂ had sperm in the vas deferens. The testes appeared rather flaccid in all the adults. There were slight traces of yellow bodies in the ovaries of some adult ♀♀, but it was impossible to tell how many corpora lutea these represented (with the naked eye or a dissecting scope).

Aug. 13 The breeding season in the San Gabriel and San Bernardino Mts. has been completed. No ♀♀ possessed eggs in the oviducts, nor did any

Aug. 13 | UCR, Riverside Co., Calif.

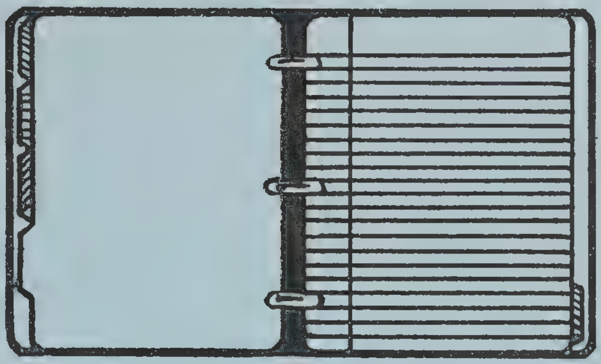
of them have fresh corpora lutea. None of the ♂♂ possessed sperm at the terminal end of the vas deferens. No newly hatched animals were seen in any of the 3 mountain ranges under discussion.

Sept. 10 | San Gabriel Mts., Los Angeles Co., Calif.

See Journal, p. 39, for discussion of relative abundance of lizards between here and San Bernardino Mts. at this time of year.

LOOSE LEAF INDEX

DURABLE INDEX DIVIDERS, SUITABLE FOR SCHOOL OR COMMERCIAL USE



IDEAL FOR CLASSIFYING OR SEPARATING STUDIES, VARIOUS SUBJECTS OR MISCELLANEOUS DATA.

Sceloporus magister

CLASS SCHEDULE

PERIOD TIME	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH
COURSE **MONDAY** INSTRUCTOR								
COURSE **TUESDAY** INSTRUCTOR								
COURSE **WEDNESDAY** INSTRUCTOR								
COURSE **THURSDAY** INSTRUCTOR								
COURSE **FRIDAY** INSTRUCTOR								
COURSE **SATURDAY** INSTRUCTOR								

NAME ______________________________

SCHOOL ____________________ CLASS ____________________

HOME ADDRESS ______________________________

CITY ____________________ TELEPHONE ____________________

Sceloporus
magister

Mayhew
1958

June 13 Yaqui Wells, San Diego Co., Calif.

This morning a ♀ was captured that had considerable red on the head. She appeared to contain eggs, so we brought her back to UCR.

June 14 When the ♀ was taken from the collecting sack today, we found one egg in the sack. It was pretty well desiccated, however. I put it in a shallow dish of water for a couple of hours, but the appearance of the egg didn't change any.

June 17 After incubating the egg for a couple of days at 90°F. and 85% relative humidity, the egg still looked the same. I broke it open and found the yolk was completely dry — no liquid in the egg at all.

July 7 A ♀ captured at Yaqui Wells, San Diego Co., Calif. June 13 was marked #1 by toe-clipping & lettered with a big M with paint on the back. She was released at the southern edge of the campus in the Sceloporus orcutti study area about 5PM (PDST) on a rock outcrop that so far has possessed no S. orcutti as far as we can tell (at least, none have been seen there).

Mayhew
1958

Sceloporus magister

Sept. 18 — Hesperia, San Bernardino Co., Calif.

This morning at 0825 we captured 2 immature animals on Joshua trees. The air temp. was 26.2°C., the soil surface temp. was 40.4°C. No adults were seen.

Sept. 19 — 11 mi. E. of Glamis, Imperial Co., Calif.

This afternoon one immature ♀ was captured in a mesquite in the bottom of a dry wash. The area on each side of the wash was quite barren. The air temp. at this time (1615) was 37.8°C., the soil surface temp. was 44.5°C.

Oct. 18 — 5 mi. E. of Phelan, San Bernardino Co., Calif.

One immature animal was captured while it was hanging on the side of a telephone pole. No adults were seen at all today.

1959

Mar. 10 — 1 mi. W. of Phelan, San Bernardino Co., Calif.

Frank Aubrey & I looked for these animals today from 1140 until 1320, but without success. We looked on the trunks of Joshua trees and on telephone poles, but none could be seen. Then we turned over Joshua tree logs and debris, but still no success. During the spring we often found them spending the night beneath this debris, so they were easy to catch the next day

Mar. 10 1 mi. W. of Phelan, San Bernardino Co., Calif.

before they warmed up. However, they were not to be found in these locations today, even though we dug into the soil for several inches at the point where the debris had been lying. Therefore, I feel these animals are still hibernating in some as yet undiscovered location. The maximum air temp. 1 cm. above the ground while we were in the area was only 22.0°C., the maximum soil surface temp. was 42.5°C.

April 10 5 mi. N. of Kelso, San Bernardino Co., Calif.

This afternoon one immature was captured and another one seen. No adults were seen, however. The time was approximately 1600.

April 14 Near Desert Springs, San Bernardino Co., Calif.

Today Frank Aubrey & I worked in this area to capture this month's sample of this species. Although the stand of Joshua trees here is quite good, we found few members of this species. We were able to capture all we saw (3), however. These were 1 immature ♂, 1 adult ♂, & 1 adult ♀. The air temp. felt reasonably warm (26.2°C. at 30"), but the sky was overcast. From our observations, we think that perhaps few of the animals have left their hibernating sites at this altitude (between 3700 and 4100 ft.)

Apr. 24 2 mi. N.E. of Yucca Valley, San Bernardino Co., Calif.

This afternoon at 1450 we captured the only member of this species that we saw today. It was sunning itself on the trunk of a Joshua tree at the east side of the Old Woman Spring Road at about 4000 feet in elevation. The sky was clear, but the air temp. was rather cool — (30") — 24.4°C.; (1cm) — 27.5°C.

May 8 5 mi. W. of Desert Springs, San Bernardino Co., Calif.

Today, between 0957 and 1228, 3 ♀ were captured. During this period only 2 others were seen, both of which escaped. We were surprised that the animals were no more abundant than this in the region in question, since this area contains a rather dense Joshua tree woodland. Except for a slight breeze (9-12 mph.), the weather seemed perfect for lizards. We drove through considerable Joshua tree woodland around Phelan without seeing any more animals of this species.

May 9 1 mi. E. of Hesperia, San Bernardino Co., Calif.

This afternoon, between 1500 and 1530, 3 animals (2 adult ♂, 1 imm. ♀) were captured here. Two others were seen but could not be captured. Later, as we were driving near Hesperia, several were seen on Joshua trees, but

May 9 | 1 mi. E. of Hesperia, San Bernardino Co., Calif.

we didn't have time to stop and try to catch them. I have the impression that these animals are more numerous here than in the Phelan-Desert Springs area in which we have been looking. However, the time of day at this time of the year may have something to do with the relative numbers seen in these locations.

May 9 | 7½ mi. W. of Lucerne Valley, San Berdoo Co., Calif.

One adult ♂ was captured among the rocks on the rocky slopes of the Granite Mts. It was captured at 1640, so the temperatures had dropped considerably below the maximums for the day. Two more were seen, but they succeeded in escaping in crevices in the rocks.

June 9 | 3 mi. N.E. of Yucca Valley, San Bernardino Co., Calif.

This afternoon we looked in Joshua tree woodland for these animals, but saw very few of them. Each of them seen was sitting in the sun on the trunk of a Joshua tree. Only one of these could be caught, however (only 2 others were seen on Joshua trees). Two animals were captured after they were seen sitting out in the open on rather large rocks on a very rocky slope. There were some scattered Joshua trees around.

Mayhew
1959

June 10 Belle Campgd., Joshua Tree Nat'l. Mon., ~~3 mi. N.E. of Yucca Valley~~, San Bernardino Co., Calif.

An adult was seen sitting in the open on a branch of a Joshua tree at 1445 today. This is at an elevation of 3900 ft. The air temp (30") was 28.5°C., the soil surface temp. was 45.5°C.

June 23 Phelan area, San Bernardino Co., Calif.

Six animals were captured in this area today (3 ♂, 3 ♀). We captured every one we saw today, which I don't think we've ever been able to do before. They are very scattered in this area. We never saw more than 2 at one stop, and this occurred only once (both were young animals). The earliest one was caught at 0900 when the air temp. was 33.0°C., and the last one was seen at 1215 when the air temp. was 41.0°C. At this time, however, the animals were in the deepest shade to be found in the Joshua trees. There must not be a great deal of competition between this species & Sceloporus occidentalis since both were taken from the same Joshua tree at times.

July 15 Lovejoy Buttes, 6½ mi. N. of Llano, Los Angeles Co., Calif.

We have finally located an area in which this species is rather common. We did not go up into the buttes proper, but drove along the roads that skirt along the flanks of the buttes. Fourteen of the 24 animals we

July 15 | Lovejoy Buttes, 6½ mi. N. of Llano, Los Angeles Co., Calif.

caught today were in this area. In fact we saw as many in ½ mile along the road as we have usually seen in an entire day in the other areas we've worked. We arrived in the area before the animals were active and stayed until nearly sundown so we are sure about their activity patterns at this time of the year in this area. We were fortunate enough to catch the first and last ones we saw this morning and also this afternoon, so we have good temp. data on their activity patterns. The earliest was caught at 0600 with temp. conditions as follows (immature):

air temp. (30") – 24.0 °C.
" " (1cm) – 24.0 °C.
soil surface temp. – 23.6 °C.
cloacal temp. – 33.4 °C.

The latest caught this morning (adult) was at 1107, with temps. as follows:

air temp. (30") – 35.0 °C.
" " (1cm) – 40.0 °C.
soil surface temp. – 59.0 °C.
cloacal temp. – 36.9 °C.

The earliest seen this afternoon was at 1455 (an adult), with temps. as follows:

air temp. (30") – 38.0 °C.
" " (1cm.) – 40.0 °C.

July 15 Lovejoy Buttes, Los Angeles Co., Calif.

soil surface temp. — 53.0 °C.
cloacal temp. — 40.2 °C.

The last one seen for the day (adult) was caught at 1800, with temps. as follows:

air temp. (30") — 31.5 °C.
" " (1 cm.) — 32.8 °C.
soil surface temp. — 38.0 °C.
cloacal temp. — 31.9 °C.

The first adult caught this morning (at 0815) was taken with following temp. conditions:

air temp. (30") — 29.8 °C.
" " (1 cm.) — 33.5 °C.
soil surface temp. — 42.4 °C.
cloacal temp. — 35.7 °C.

This compares favorably with the last temp. of the day, which was also taken with an adult. Likewise, the two temps. in the middle of the day compare closely. This is particularly true of the air temps. at 1 cm.

July 29 Phelan area, San Bernardino Co., Calif.

We saw the first animal (adult) at 0558, sitting in sun on Joshua tree trunk. at the time, the were conditions were:

air temp. (30") — 23.7 °C. no wind
" " (1 cm) — 23.4 °C. altitude — 3600'
soil surface temp — 21.0 °C.
relative humidity — 22%

July 29 — Phelan area, San Bernardino Co., Calif.

We saw about 8 animals before we succeeded in capturing any. We saw the last animal, sitting in shade on the trunk of a Joshua tree, at 1225. The first one seen this afternoon was at 1650. The last one was seen (and captured) at 1840. Sundown occurred at 1850.

Nov. 8 — Lovejoy Butte area, Los Angeles Co., Calif.

We drove over considerable country that should have animals of this species between 1030 and 1430, but didn't see a trace of any lizards.

1960

April 30 — Brawley, Imperial Co., Calif.

An adult was seen at 1615 sunning itself on a power pole beside the road (highway 111) at the north edge of town. The air temp. (30") at the time was 31.8°C. We were unable to capture it.

1962

May 4 — Hesperia, San Bernardino Co., Calif.

A young ♀, collected today, measured 65 mm (S-V length). It was DOA at UCR.

UCR, Riverside Co., Calif.

June 28 — It appears that many ♂♂ are near the end of the breeding season. These animals were collected the past two days at Hesperia and the Lovejoy - Saddleback Buttes areas. Several of the ♂♂

June 28 — UCR, Riverside Co., Calif.

possessed a milky secretion in the anterior portion of the vas deferens, but the posterior portion was quite clear. Nevertheless, microscopic examination of a portion of the terminal end revealed that some motile sperm still were present in this portion, even though no milky secretion could be seen.

Nov. 9 — The young captive ♂ (#1) has tamed down very nicely (captured 9/23/62), but the young ♀ (#2), captured at the same time, is still extremely wary. I don't know whether she is getting enough to eat or not, since she runs under the rocks at my approach with food. She appears to be healthy, however. The ♂ is ready to eat each time mealworms are dropped into the cage.

1963

Jan. 10 — UCR, Riverside Co., Calif.

The young ♀ in the indoor cage has been observed buried under the sand on several occasions lately. Usually only a portion of the tail is exposed. These animals are like the Sauromalus, Phrynosoma m'calli, Crotaphytus wislizeni, & Amphibolurus pictus in the lab. in

Sceloporus magister

Jan. 10 UCR, Riverside Co., Calif.

that they do not respond when the overhead lights are turned on at night. They continue sleeping as if nothing had happened.

Feb. 11 Both of these young animals in the indoor cage are beginning to eat a little more than they did through most of the winter, although their appetites still are not up to the usual spring standards. Nevertheless, both have been active all winter long under an 11 hour photoperiod. The ♂ seems to eat more than the ♀, but perhaps this is due to her very retiring nature — she rarely stays out in the open when I approach the cage to feed them.

Hesperia, San Bernardino Co., Calif.

May 4 Two young lizards were measured + released today: 49 mm and 52 mm (S-V).

Sceloporus
occidentalis

Sceloporus
occidentalis

Mayhew 1958

Sceloporus occidentalis

July 3

Univ. Calif. campus, Riverside, Riverside Co., Calif.

This morning at 9:30 AM. 13 eggs were found in the bowl containing 3 ♀. 11 of these eggs were set on a layer of damp soil in a Petri dish & placed in the Vapor-temp. The dry bulb was 90°F., the wet bulb 88°F (relative humidity 92%). The remaining 2 eggs were placed in the Vapor-temp in a bare Petri dish under the same incubating conditions. All of the eggs were still turgid at 4 P.M.

July 7 The 2 eggs in the bare Petri dish seem to be slightly more desiccated than those on the damp sand, but still don't seem to be in any serious condition. The soil in the other container has been moistened slightly every other day since incubation began.

July 16 Today I opened one of the two eggs in the bare Petri dish because it had become completely desiccated. There was a trace of an embryo that had been long dead. The yolk & albumen were completely dry. The other egg in the same dish appears to be doing quite well yet. However, it is touching the side of the dish, which may have something to do

July 16 — UCR campus, Riverside Co., Calif.

with the difference in reaction between the two eggs. A sample of six eggs were measured today. The measurements were (in mm.):

14.2 X 10.3	15 X 11
14.2 X 10.5	14.7 X 11.5
14 X 10.3	12.6 X 9.1

The average measurements are: 14.1 X 10.4.

July 18 — At 1420 today I noticed the lizard Jean Coulson brought from Anaheim, Orange Co., Calif. 7 July, 1958, ~~digging~~ sitting in a hole in the soil in her bowl. A closer examination showed she had laid 4 eggs and had almost finished laying a 5th egg. At 1440 a 6th egg had been laid + the ♀ had covered the opening to the egg chamber. Each of the eggs, upon its ~~this~~ removal from the soil (which took place at 1445), was white with a bright reddish-orange spot. It is assumed this is the yolk mass. Each egg was measured. The measurements are: 13.8 mm. X 8.5 mm.

14.3 " X 8.5 "
13.0 " X 7.8 "
13.3 " X 7.6 "
13.2 " X 8.5 "
12.7 " X 7.9 "

The eggs were then placed in the Vapor-temp.

July 21 UCR campus, Riverside Co., Calif.
Today Oscar Clarke brought in 4 eggs that he had been incubating at home since about . He had them at room temperature in moist sand. In transferring the eggs from his container to ours, I broke one of the eggs. The embryo was almost ready to hatch, but not quite. It still had some of the yolk outside its body. This animal was preserved for embryology demonstration material, since it couldn't survive at that age. The other three eggs were placed in a container of moist sand and set on top of the filing cabinet, which kept them at room temperature.

July 26 Today one of the eggs from Oscar Clarke hatched. It was toe-clipped #2 and placed in a terrarium inside the outdoor find cage. It was 25 mm. long ( ).

July 27 Today the other 2 eggs from Oscar Clarke hatched. They were toe-clipped + placed with the first one:
#3 (♂) 24 mm. long
#4 (♀) 24 " "

July 28 Jean Coulson brought in a lizard she caught in Anaheim, Orange Co., Calif. today. It is a newly-hatched one. #5 (♀) 27 mm. long. (Kept with other young).

Aug. 7 UCR campus, Riverside Co., Calif.

Today 2 of the eggs set July 3 hatched in the Vapor-temp. They dropped through the holes in the bottom of the instrument & disappeared, so we covered the openings with wire screen.

Aug. 11 Today when I reached the office I found the rest of the eggs of the clutch set July 3 to be all shrivelled up. All 8 of them were opened. Something happened to them over the week-end because they appeared to be in good shape Friday when I left. Seven of the eggs contained young lizards that were just about ready to hatch, but were dead. The eighth egg contained a very small embryo (4 mm. in diameter) that must have been dead quite a while. That egg appeared rather white, whereas the other eggs were quite dark. These embryos were preserved together.

Aug. 14 Today we opened several of the animals collected at Mt. Baldy Aug. 1 to see the reproductive condition of each:

Sex	Right	Left
Pair ♂	3 mm x 4 mm.	3 mm. x 5 mm.
Pair ♀	11 ova, .75 mm. to 1.5 mm.	11 ova, 1 mm. to 1.5 mm.
♀	14 " , .5 " " 1.25 "	14 " , .5 " " 1.25 "
♀	12 " , .75 " " 1 "	11 " , 1 " " 1.25 "

Sceloporus occidentalis

Sept. 18 Hesperia, San Bernardino Co., Calif.

Nine adults were captured in this area this morning between 0645 and 0859. The air temp. range was from 21.8°C. to 29°C., the soil surface temp. from 24.5°C. to 40.8°C. All of them were taken from Joshua trees.

Sept. 20 5 mi. N. of Idyllwild, Riverside Co., Calif.

One adult was captured here at 1515 today. The air temp. was 24°C., the soil surface temp. was 24.8°C in shade, 40.6°C. in sunshine.

Oct. 10 10 mi. N.E. of Redlands, San Bernardino Co., Calif.

Two adults were captured in the dry stream bed of Mill Creek Canyon this morning between 1000 and 1100.

Barton Flats, San Bernardino Co., Calif.

Several adults were captured here between 1325 and 1400. Air temp. at this time was 23°C.

Oct. 18 10 mi. E. of Phelan, San Bernardino Co., Calif.

We collected on at this location on a Joshua tree at 1050, then collected 2 more from the trunks of Joshua trees as we drove toward Phelan. They seem to be easier to find from a car than by walking.

1959

Mar. 3 2 mi. S. of UCR campus, Riverside Co., Calif.

This afternoon eight animals were captured between 1245 and 1435. These

Mayhew 1959

Sceloporus occidentalis

Mar. 3 — 2 mi. S. of UCR campus, Riverside Co., Calif.

are the first ones seen by us in this region this year. A few others were seen that we were unable to catch. Several of the animals were very dark when captured. The temperatures during our stay in the area were as follows:

air temp. (30") — 27.5 °C.
" " (1 cm) — 28.4 °C.
soil surface temp. — 42.5 °C.
rock " " — 42 °C.

Mar. 10 — 1 mi. W. of Phelan, San Bernardino Co., Calif.

Today at 1210 and adult ♀ was found and captured beneath some debris around the base of a Joshua tree. Its cloacal temp. was 15 °C. She was so cold she failed to try to escape when uncovered. At the time the air temp. at 1 cm. was 20.8 °C., and the soil surface temp. (in sun) was 37.2 °C.

April 11 — UCR campus, Riverside Co., Calif.

One adult ♂ was captured on B study area this morning. As far as I know, it was the only member of this species seen by the field zoology class this morning.

April 14 — Near Desert Springs, San Bernardino Co., Calif.

We worked through the Joshua tree woodland habitat looking for S. magister but we found many more of this species

Mayhew
1959

April 14 — Near Desert Springs, San Bernardino Co., Calif.

Both ♂ + ♀ adults were fairly numerous although there were more ♂ out when we were working (at least, we caught more ♂).

Apr. 24 — 1 mi. E. of Yucca Valley, San Bernardino Co., Calif.

One adult ♂ was captured while it was sunning itself on a large rock near Old Woman Spring Road. It was the only one we saw all day long.

May 8 — 1 mi. E. of Phelan, San Bernardino Co., Calif.

This morning, in a matter of 15 min. we captured 3 adult ♂ and saw 2 other adults. From then ~~on~~ (0900 to 0915) until 1350, however, none were even seen, even though we were still in Joshua tree woodland. Then we began to see quite a number of them on fence posts rather than Joshua trees.

May 9 — 2 mi. N. of Cedar Springs, San Bernardino Co., Calif.

This morning, between 0915 and 1110, we captured 8 animals along the bank of the Mojave River. Most of them were on dead logs lying along the stream bank or in the immediate vicinity. Several others were seen, but were not bothered because we had already obtained a large enough sample from this area. Apparently

May 9 | 2 mi. N. of Cedar Springs, San Bernardino Co., Calif.

they are very numerous in this area (elevation – 3225 ft.). One of the ♀ captured here had 5 eggs in each oviduct, apparently ready to be laid.

May 9 | 6 mi. S.E. of Hesperia, San Bernardino Co., Calif.

4 animals were caught on fence posts along the road in this region. Many more were seen, but were not disturbed by us because we felt our sample was large enough from this area. All of them were seen on fence posts in this grazed Joshua tree woodland.

May 17 | Barton Flats, San Bernardino Co., Calif.

Several adults were captured along the stream bed in South Fork campground this morning. They were not as numerous as Sceloporus graciosus in the area under observation, however. This location is 6300 ft. high.

May 29 | Box Springs Mts., Riverside Co., Calif.

This afternoon, between 1330 and 1520, Frank Awbrey & I caught 5 animals (4 ad. ♂, 1 ad. ♀) while they were sunning themselves on rocks on the hillside. They were rather numerous in this area, even though rather large numbers of Sceloporus orcutti also were found here.

June 9 | 4 mi. N.E. of Yucca Valley, San Bernardino Co., Calif.

No animals of this species were seen in this area today, even though we

June 9 — 4 mi. N.E. of Yucca Valley, San Bernardino Co., Calif.
captured several here in April. This in spite of the fact that several Sceloporus magister were seen here this time, and 3 of them were captured. This at an elevation of 4100 feet. The weather conditions here today were:

air temp. (30") – 28.5°C.
" " (1 cm.) – 31.5°C.
soil surface temp. – 44.5°C.
wind – N.E. at 11 mph.

June 23 — Phelan area, San Bernardino Co., Calif.
a large number of adult ♂ (14) were caught in this region today, but relatively few ♀ were seen. It is felt they may be laying eggs now. They exhibited two activity patterns today – we found them exposed from 0800 to 1040, then again from 1300 until we left at 1400 (they undoubtedly were still active after this time – we were forced to leave because of the time). The air temp. (30") ranged from 32.0°C. to 37.5°C. during the first activity period. The air temp. had dropped to 34.5°C. when the second activity period was noticed. (a strong wind developed that cooled things noticeably.) These animals were found inhabiting the same habitat that Sceloporus magister lives in. In fact, both species were caught in the same tree on occasion.

Mayhew 1959

June 24 3 mi. N. of Sunnymead (Pigeon Pass Road), Riverside Co., Calif.

A fairly large number of animals were seen on the rock outcrops + fence posts in this region. They were seen in large numbers when we arrived at 0800, when the air temp. was 27.8°C. (at 30"). By 0900, however, almost none of them could be seen around the rocks. At this time the air temp. was about 28.5°C. A few were still seen on fence posts after that time, nevertheless. Often they were seen sitting on the same rocks as Sceloporus orcutti.

July 7 UCR campus, Riverside Co., Calif.

Although we looked diligently for this species while capturing Sceloporus orcutti, we didn't see a single one.

July 9 4 mi. N.W. of Sunnymead, Riverside Co., Calif.

This morning between 0630 and 0920 we caught 12 animals (9 ♂ + 3 ♀). One more was seen at 1030, but we couldn't catch it. At this time, the air temp. (30") was 37.9°C. On several occasions these animals were caught on the same rock on which a Sceloporus orcutti was seen or captured. I don't understand why we find so few of this species at UCR when we find them abundant here (about 4 miles due east of UCR as the crow flies) and we find them abundant 2 miles south of UCR, again in company with Sceloporus orcutti.

July 15 Lovejoy Buttes, 6½ mi. N. of Llano, Los Angeles Co., Calif.

This species was noticeable by its apparent complete absence in this region, even though it is quite abundant within 10 miles to the S.E. in country that appears to be very similar. However, this area is slightly over 1000 feet lower, and is further away from the larger mountain ranges (San Gabriel Mts.). None of these animals were seen until we returned to the Phelan area. It was almost sundown when we reached the Phelan area, so few animals could be found then. However, 1 animal was seen on an electric pole at 1850 (sundown at 1901). It ran into a crack in the pole, but we were able to retrieve it. One other animal was found in the crack of another telephone pole (power pole), but it escaped. We looked in about a dozen power poles without finding any others.

July 16 Box Springs Mts., Riverside Co., Calif.

We saw the first animal this morning at 0540, but couldn't catch it. However, from then on throughout the rest of the morning these animals did not appear to be very numerous. However, this may have been due to the fact that we were working in chaparral

Sceloporus occidentalis

July 16 — Box Springs Mts., Riverside Co., Calif.

whereas in the past in this region we have worked in coastal sage scrub. Several were seen as we left the mountains, sitting on fenceposts, even though the temperature at this time of day (noon) was considerably higher than we had found on the mountains.

July 29 — Phelan area, San Bernardino Co., Calif.

The first animal was seen at 0650, sitting in the sun on the trunk of a Joshua tree. A large number were found on fence posts, electric power poles, and Joshua trees from about 1 mile east of Phelan to about 3 miles east. From 1030 to 1305 only an occasional straggler was seen (1030, 1155, 1205, 1305). At 1305, temps. were:

air temp. (30") – 37.4°C.
" " (1cm) – 43.5°C.
soil surface temp. – 61.5°C.

Again, between 1430 and 1530 an occasional straggler would be seen. However, about 1530 they again began to be seen in fair numbers. At 1530 the air temp. (30") was 34.5°C., or only about 3°C. below the maximum for the day and about 2°C. below the temp. at which most activity ceased near mid-day. (We stopped looking from 1330 to 1430)

Mayhew 1959 | *Sceloporus occidentalis* | 13.

July 29 — Phelan area, San Bernardino Co., Calif.

The last animal was seen at 1855 (sundown at 1850) sitting on the west side of an electric power pole. We stopped looking for animals at 1900, when the air temp. (30") was 26.8°C.

Aug. 5 — Box Springs Mts., Riverside Co., Calif.

2 adult ♀, 1 immature ♀, & 1 adult ♂ were caught this morning between 1800 & 2800 feet elevation. Very few animals were seen at 2200 feet, but they were not especially wary at first. As the day grew warmer, they became increasingly difficult to catch. The last one was captured on a fence post (in shade) at 1000.

Aug. 12 — 2 mi. S. of UCR, Riverside Co., Calif.

Very few animals were seen here today, although they were quite common earlier in the year.

Sept. 14 — Blue Ridge, Los Angeles Co., Calif.

Three adults were seen this afternoon but they were so extremely wary we were unable to capture any of them. These were seen about 1430. Although it seemed quite cold to us, the temp. in protected areas near the ground was quite pleasant. air Temp. (30") – 13.0°C.
" " (1cm) – 19.5°C.
soil surf temp. – 27.0°C.
rock " " – 30.5°C.
S.W. wind – 10-15 mph.

Nov. 8 | Phelan area, San Bernardino Co., Calif.

We covered this collecting area from 0925 to 1030 without seeing a trace of a lizard. We returned later in the day (1430 to 1530) without seeing any lizards.

1960

Aug. 14 | Carpenteria, Ventura Co., Calif.

Teresa Farmer dug up a a lizard nest this morning at her grandfather's house on Rincon Point. The eggs (8) were buried in beach sand about 4 inches below the surface. The nest was against the cement of the patio wall. Jack Farmer opened one egg & found a living embryo nearly fully developed.

Nov. 24 | Eells Ranch, 9 mi. S. of Modesto, Stanislaus Co., Calif.

Twenty-four animals were caught from 1130 to 1300. The first one was seen sunning on the end of a shovel that was leaning against the house. It was a juvenal lizard. Another juvenal was seen on the handle when a closer inspection was made. Three other juvenals were found in the sun on the sides of logs or buildings. One juvenal was found in a roll of bamboo screen over the south windows of the porch. However, the bulk were found beneath an old dog house beside the pump house. Four adults (2 ♂ and 2 ♀) were caught under the dog house beneath a board supporting

Mayhew 1960

Nov. 24 Eells Ranch, 9 mi. S. of Modesto, Stanislaus Co., Calif.

it. One adult ♂ was caught on the wall between the dog house and the pump house. A number of immature and juvenal animals also were found under the same board, as well as on the wall of the pump house. All but 5 of these animals were captured at this location (of the 24), piled on one another. That is, 19 animals were collected here (5 adults, 4 immatures and 10 juvenals). Some of the animals (both adult and young) were covered with soil under the board. They were uncovered by running my hand through the soil. The air temperature at the time of capture was 60°F (15.6°C.). There were no clouds and no wind was blowing. All the lizards were rather torpid (some very torpid), so they were all caught by hand. All of the animals that were seen were captured.

1961

Feb. 26 UCR campus, Riverside Co., Calif.

Today a ♀ held in captivity by Gene Roller laid 15 eggs in a terrarium he had placed it in a few days ago. She has been in captivity for ? , but there are ♂♂ in the terrarium also. The eggs were all dessicated by the time Gene discovered them, so no accurate measurements were possible. They couldn't be incubated.

Mar. 13 UCR campus, Riverside Co., Calif.
Rather large numbers of this species were seen along the old fence posts bordering the road to Biological Control's experimental groves. Several were seen around the piles of debris near the old barn in the same canyon.

April 1 9 mi. S. of Modesto, Stanislaus Co., Calif.
3 animals were caught at 1640 on the pump house (1) or beneath the old dog house beside it (2 – 1 ad ♂, 1 juv). The air temperature outside the kitchen window at the time was 74°F. (23.3°C.). There was no wind and no overcast. "Mom" Eells said this was the first really warm day they had had so far. The adult & one of the juvenals had been active, since Bruce saw them running about a few minutes earlier.

Oct. 25 UCR, Riverside Co., Calif.
Two of the animals released outside Darwin Hall in July 1961 are still active. At 1320 (air temp. 30.0°C.) one animal was on the ground in the shade of a palm tree. At 1430 (air temp. 28.6°C.) and at 1500 (air temp. 27.4°C.) one animal was in the sun on the south wall of the auditorium & one was in the shade on the same wall. At 1530 (air temp. 25.6°C.) both animals were in the shade on the same wall. None were seen at 1600 (air temp. 24.6°C.) or later today, although I continued to look for them until 1730.

Mayhew
1961

Oct. 26 UCR, Riverside Co., Calif.

None were visible when I checked at 0820 (air temp. 18.0°C.). The sun was hidden by clouds at the time.

None were seen at 0925, 1155, 1500 or 1615. The sky was overcast much of the day.

Oct. 27 One animal was seen on the south wall of the auditorium in the sun at 1020 (air temp. 17.6°C.). None had been seen when the area was examined at 0805 and at 0930.

One animal was in the sun on the wall at 1330 (air temp. 22.0°C.).

One animal was in the shade on the south wall at 1545 (air temp. 21.6°C.).

Oct. 30 One animal was on the south wall of the LSB auditorium at 1135 today (air temp. 16.4°C.). The sky was overcast, & it appeared that rain could fall at any minute.

Oct. 31 No animals were seen at 1330 today, which was not greatly surprising since the sky is completely overcast.

Nov. 1 One animal was seen on the rock at the side of the auditorium at 1020, basking in the sun. At 1115 it was seen on the south wall of the auditorium even though the sky was quite cloudy. The air temp., however, was relatively high at this time (above 20°C.), although I didn't measure it.

Mayhew
1961

Sceloporus occidentalis

Nov. 2 UCR, Riverside Co., Calif.

One animal was seen on the south wall of the auditorium at 1110. It was still there when I looked at 1130. Another animal also was out at 1130 — on a rock beside the auditorium. The sun is shining brightly today (air temp. at 1140 is 18.4°C.).

Val Verde, Riverside Co., Calif.

One adult was seen in a crack in a rock this afternoon. It was the only one I saw, even though I was in their habitat from 1330 to 1515.

Nov. 3 UCR, Riverside Co., Calif.

Two animals were visible at 0945. One was in broken shade on the south wall of the auditorium. It was noosed, + found to have a cloacal temp. of 35.2 °C. (air temp. [1 meter] - 18.0°C). It was an adult ♂ that was toe-clipped #6 (nail of toe #7 missing also). It measured 75 mm. S-V length. Unfortunately, I can not find its previous history in any of my records. The other animal was in the sun on the ground beneath the palm tree, but it eluded my noose. Two animals were seen again at 1130 and at 1505. Air temp. at 1130 was 22.2°C., at 1505 it was 23.0°C.

Nov. 10 Two were seen on the south wall of LSB auditorium this morning.

Nov. 10 UCR, Riverside Co., Calif.
They have been seen in the same general location for the past week.

Nov. 14 One animal was seen on the south wall of the auditorium at 1155, 1250, 1400.

Nov. 20 No animals have been seen on the wall since the 14th, even though I have looked as often as before.

1962

Jan. 3 UCR, Riverside Co., Calif.
A marked ♂ was seen beside the LSB auditorium at 1340 today. This is the first time one of these animals has been seen since Nov. 14, 1961, in spite of the warm winter we have had.

Jan. 6 The same animal was seen at 1045 on the ground beneath a palm tree beside LSB auditorium.

June 28 The ♂♂ collected in the San Gabriel Mts. the last couple of days seem to be near the end of the breeding season already. The vas deferens of nearly all these ♂♂ appeared to contain considerably less of the milky material than earlier in the season. Motile sperm were found in every animal examined, but the proportion of motile to non-motile

June 28 — UCR, Riverside Co., Calif.

sperm was very low in many lizards. These animals appear to be nearer the end of the breeding season than the Sceloporus graciosus ~~♀~~ captured in the same location.

June 29 — Several ♂♂ collected in the Santa Ana River wash in Riverside today still contained large numbers of motile sperm in the vas deferens. However, some animals had a higher percentage of non-motile than motile sperm in the terminal end of the vas deferens. Most of the vas deferens were still quite milky, although one or two were almost clear at the terminal end. These still contained motile sperm in small quantities, however.

Nov. 3 — Mt. Palomar State Park, San Diego Co., Calif.

Two juveniles were captured, measured, and released this morning (elevation—5000 ft.). Measurements were:

Time	Sex	S-V length (mm)
1135	♂	34
1205	♂	32

Dec. 5 — UCR, Riverside Co., Calif.

An adult (very dark) was seen on the ground at 1315 today beside Life Sciences Building auditorium. Air temperatures have been in the high 70's (F) the last 2 days.

Mar. 28 UCR campus, Riverside Co., Calif.

Chuck Elliott brought in a young lizard he caught yesterday. It is: ♀ – 40 mm (S-V).

April 24 San Jacinto Mts., Riverside Co., Calif.

An immature female (38 mm, S-V) was captured at 5850 feet this afternoon at 1530. It was released after being measured.

May 19 The following young animals were measured near Lake Elsinore today:

♂ – 40 mm (S-V)
♂ – 48 " "

Sceloporus orcutti

Sceloporus
orcutti

Sceloporus orcutti

June 16 Univ. Calif. campus, Riverside, Riverside Co., Calif.

This afternoon I turned loose three of the animals that have been in the outdoor cages. They were numbers 9 (♂), 70 (♀), and 240 (♂ – 3 + 2 of left hind foot, 1 + 4 of right hind foot). These were released just outside the cages.

June 18 Another animal was released near greenhouse 16 this afternoon — number 100 (83 mm. long), ♀.

July 3 This morning at 8 A.M. 7 eggs were found lying on the damp soil in a bowl in which one ♀ was kept. 5 of the eggs were placed in a Petri dish on damp soil and placed in the Vapor-temp. The 2 remaining eggs were placed in a bare Petri dish & then put in the Vapor-temp. They are being incubated at 90°F. and 92% relative humidity. All of the eggs were still turgid at 4 P.M. This morning Duane Munro, Frank Acobrey & I began marking lizards at the southern edge of the campus. We captured, toe-clipped & painted a number on 6 individuals this morning. The numbers used were: 1 to 5 and 33 (since a toe was already missing). A large number, corresponding to that on the lizard, is painted on the roc-

July 3 UCR campus, Riverside, Riverside Co., Calif.

at the point where it was first sighted. We quit at 12 noon (PDST) because no more lizards could be seen on top of rocks (due to heat). This afternoon Frank & I returned to the study area and saw several lizards basking, but we were unable to catch any. Two lizards were seen on top of rocks at 6:30 P.M. (PDST) as we were leaving.

July 7 This morning Dee, Frank & I caught 5 additional lizards on the campus study area (6 to 10). In addition, we saw 2, 5, and 33 practically on the spots where they were captured. We didn't reach the study area until 10 A.M. and only stayed until 1 P.M. (PDST). We didn't see any lizards on top of the rocks after noon, but did see a couple in the shade on the side of large rock outcrops.

The 2 eggs being incubated in a bare Petri dish are showing signs of desiccation. However, they aren't as shrivelled up as the eggs of Sceloporus graciosus were after the same length of incubation.

~~July 8~~ This evening Frank & I returned to the study area to try to catch more lizards. Several of them were

July 7 UCR campus, Riverside, Riverside Co., Calif.

seen, but we succeeded in catching only one. The last ones were seen at 1910 (all times hereafter will be standard time on a 24 hour system). At that time, air temperature was 26°C. (79°F.) + rock surface temp. was 29°C. (84°F.).

July 8 At 0845 the air temp. was 30°C. (86°F.). Numerous lizards were seen sunning themselves at the time. During the morning 5 lizards were caught, marked and released. In addition, one ♂ was taken from the lizard cage + released (O, with toes 1 + 2 missing). Also, one ♀ was caught (#19) that seems to have eggs, so she was brought back to the lab. until she lays her eggs. Then she will be released at the site of capture. We now have 17 marked animals on the study area that were marked where captured, and 3 that were released on rock outcrops that have not shown any lizards as yet. #1 was seen this morning about 30 feet from the mark on the rock. There is a rocky ledge that connects the two areas. #12 was seen about 20 feet from its release point resting in the shade of a shrub on a rock that isn't connected to the release rock. It was seen there

July 8

UCR campus, Riverside, Riverside Co., Calif.

on several occasions this morning, & didn't seem to be very frightened of us. By 1035 the animals had all disappeared from the surface of the rocks. At that time air temp. was 34°C. (93°F.), rock surface temp. was 40°C. (104°F.) and temp. in direct sunlight was 37.5°C. (100°F.). There was no sign of any lizard this afternoon while Frank & I constructed a shelter for observations in the future. At 1500 the various temperatures were:

air — 40.5°C. (105°F.)
in sun — 40.5°C. (105°F.)
rock surface — 44.5°C. (112°F.)
soil surface — 55°C. (131°F.)

July 9

The temperature was rather high when we began operations this morning. Relatively few lizards were out to be seen even when we started (0730). By 0855, in a ravine, the air temp. was 36°C. (97°F.) and the rock surface temp. was 40°C. (104°F.). On a near-by hill, which had a breeze blowing on it, the air temp. was 33.5°C. (92°F.) and rock temp. was 35°C. (95°F.). Two immature animals were all that were marked today. However, several marked animals were seen. No. 7 was seen at 0730 on the marked rock.

Mayhew
1958

Sceloporus orcutti

July 9

UCR campus, Riverside, Riverside Co., Calif.

About an hour later, Dee Muraro saw both 7 & 8 on a rock outcrop due west of the marked rock about 20 feet. O was seen twice on the marked rock. 13 was also seen on its marked rock. At 1035 in our newly constructed blind (open on all sides, closed on top) the air temp. was 41°C. (106°F.) when the breeze wasn't blowing, but dropped to 39°C. (102°F.) when the breeze hit the thermometer. The maximum - minimum thermometer hanging outside my office on the north wall of the building registered 107°F (41.5°C.) during the afternoon. At 1700 the temperature was still up to 102°F., so we didn't even try to find any lizards on the study area this evening.

July 10

This morning Dee & Frank worked on the study area. Only one lizard was marked. All lizards had departed from the rock tops by 0830, at which time the air temp. was 34°C. (93°F.). Dee reached the study area at 0615 when the air temp. was 27°C. (80°F.). Several marked lizards were seen. Nos. 7 & 8 were on their marked rock with 7(♀) sitting on top of 8(♂). No. 16 was on the rock marked O. No. 1 was seen several times on its marked rock.

[illegible]

Mayhew 1958

Sceloporus orcutti

July 10 UCR campus, Riverside, Riverside Co., Calif. No. 13(♀) was seen on its marked rock sitting on top of an unmarked immature. A large *Crotalus ruber* was seen this morning under rock 4 & 5. However, it eluded the fellows's attempts at capture.

July 14 At 0835 today the air temp. was 20.5°C. (69°F.) and rock surface temp. was 23°C. (73°F.). The sky was 100% overcast at the time with a high fog. The first lizards were seen on top of rocks at 0845 (still overcast). At 1030 (clear) air temp. was 23.5°C. (74°F.) rock surface temp. was 27.5°C. (81°F.). By 1110 all lizards had gone from sunny areas of rock. Some were seen sitting in the shade at this time. Air temp. was 25°C. (77°F.), rock surface temp. 34°C. (93°F.). Only 2 lizards were captured all morning, although a large number were seen. Frank & I were ~~working~~ working in the small, rocky canyon in the future botanical garden. At one time we knew the approximate location of 9 lizards, but couldn't see one of them. One of the two lizards captured was a gravid female (No. 23), so she was brought back to the lab for her eggs. She'll be returned to her

July 14 UCR campus, Riverside, Riverside Co., Calif.
marked rock as soon as she lays. This afternoon 2 more lizards from the lizard cages were marked & released in the study area. They were Nos. 24 and 26. No. 26 acted as if it might have been injured in the operation, since it moved very little after its release. Frank & I looked for that big C. ruber they saw the other day, but we could find no trace of it.

July 15 Frank, Dee & I were in the field at 0740 today. The sky was completely overcast at that time. Air temp. was 22.5°C. (72°F.), rock surface temp. was 24°C. (75°F.). Five lizards were captured & marked this morning. One of them (#39) appeared gravid, so we brought her back to the lab. The others were released on the site of capture. Few animals were seen until after 0800, even though the fog had cleared a little before this. No. 7 and No. 18 were seen on their respective marked rocks. No. 5 was seen on a rock outcrop approx. 100 feet east of its marked rock. This is the first outcrop from its marked outcrop. No. 11 was seen on the same outcrop at the same time.

Mayhew 1958 | Sceloporus orcutti | 8.

July 15 UCR campus, Riverside Co., Calif.
(This was a lizard released from the lizard cages) No. 1 was found at 1100 on the next outcrop east of its marked rock, approx. 40 feet away. However, no other lizards were seen above ground at that time. Air temp. was 27°C. (80°F.). #15 seen east of its ℞

July 16 The three of us were able to catch 8 lizards this morning, which is our best day so far. One of them (#31) was toe-clipped, but escaped from Frank before it was painted. #37 was seen on its marked rock at 0730, and was seen on a nearby rock several times later. The sun was shining when it was first seen. The last lizard was seen on a rock at 1140. When Frank + I returned to the study area at 1600, we saw #13 + 15 on rock 13, and caught an immature on the same rock. No other lizards were even seen until 1730 when another immature was captured. The last one caught (another immature) was also the next one seen. This occurred at 1845. At 1900 we saw #14 catch something to eat on the surface of a rock. #13 + 14 were the only adult lizards seen during our entire stay on the study area this afternoon. 11 were caught today.

July 17 — UCR campus, Riverside Co., Calif.

We did very poorly this morning. We recaptured #31 and got it painted, but we caught only 1 unmarked lizard. We saw several out when we reached the study area at 0800. By 0930 no lizards were seen anywhere on the rocks. Today didn't seem to be any warmer at this time of day than yesterday, but the lizards certainly weren't out as long. There was a rather cool breeze blowing from the west this morning, which might have had some influence. We didn't have a thermometer along to check temperatures. I measured the 5 remaining eggs in the Vapor-temp. The measurements were (in mm.):

18.6 × 11   18 × 10.4
16.6 × 10.4   18 × 11
18 × 10.5

The average for the 5 eggs was: 17.8 × 10.6

While sitting in the office in greenhouse 16 this afternoon, I saw an animal run across the road between 2 CES headhouses just north of ours. I captured it and found it was a ♀ (#70) I had released from the lizard cages on June 16, 1958. It was about 150 feet from where it had been released at that time. It is in the

Mayhew 1958

July 17 UCR campus, Riverside Co., Calif.

midst of a molt. Most of the scales have been shed on the back and head, but many were left on the lower back and tail. The scales on the belly are loose, but very few of them have been lost yet. She was released on the study area this afternoon. She was captured originally by Gail Moore + Sally Rocky on Box Springs Mts. north of UCR campus April 30, 1957. At that time she weighed 25.2 grams and measured 85 mm. (snout-vent). Today she measured 91 mm., indicating a growth of 6 mm. in 14 1/2 months. We returned to the study area at 1545, but were unable to capture any more lizards. We saw #31 on the outcrop where it was captured this morning. A ♀ was also seen nearby on the same outcrop, but we couldn't catch her. We saw only 4 lizards out this afternoon, which seems unusual. However, a fairly strong westerly breeze was blowing. The lizards we saw were on rocks that were protected from the breeze. In spite of the breeze, the surface of the rocks felt quite warm, so that one would expect the lizards to be basking at this time. However, they just weren't out.

Mayhew 1958

Sceloporus orcutti

July 18 UCR campus, Riverside Co., Calif.

When we came to work this morning, we found that the left hind foot of #19 was missing entirely. Apparently one of the other ♀ took it off during the night. We put the 3 ♀ we brought in from the field into a single aquarium yesterday, which evidently was a mistake. Each of them is now separated in one section of the large aquarium. Frank & Dee worked on the study area this morning. They said there weren't too many lizards on the rocks. They were able to capture only two animals. No. 44 was seen on its marked rock.

July 22 Frank & I reached the study area about 0915. The sky was overcast, but it was rather warm. We caught two unmarked lizards by 1000 (the only ones we saw to that time) and recaptured 37, which turned out to be toe-clipped 27 (as Frank had feared). Therefore, we re-clipped it #127, repainted it & the rock. He thinks #38 will also be clipped wrong, but we haven't recaptured it yet. #2 was seen on its marked rock this morning. We caught a large *Masticophis lateralis*, but released it. This afternoon we placed +'s on the ground to mark the areas for an

July 22 UCR campus, Riverside Co., Calif.

aerial photograph. However, the overcast conditions prevented the photographer from taking the pictures today. While up there we saw 33 on rock 33, 44 on rock 44, + 127 on rock 127. On June 16, 1958 several lizards were released from the lizard cages. One of them was #240 (2+3 on left hind foot, 1+4 on right hind foot). Today we captured him across the street from greenhouse 16, about 50 feet from where he was released. He was duly painted on the back and released on the rock pile on which #19 (♀) was captured. We have her in the lab yet, waiting for her to lay her eggs. It will be interesting to see what will happen when we return her to that rock.

July 23 When Frank + I reached the blind at 0850, we saw #7 on rock 7. Air temp. was 18°C. (65°F.), rock surface temp. (shade) was 26°C. (79°F.), and the cavity temp. in the rock pile were: A — 24°C. (75°F.), B — 25°C. (77°F.), C — 23°C. (73°F.), D — 23°C. (73°F.). The four thermometers were placed in cavities of the type expected to be inhabited by the lizards. A is on the east side of the rock pile (which is about 25 ft. by 25 ft., and about 6 ft. high). It is open toward the west, and is under a rock that is

July 23 | UCR campus, Riverside Co., Calif.

4½ ft. by 4½ ft. by 2½ ft. (long, high, wide) The opening is 16 in. by 2 in. and is 14 in. deep where the base of the thermometer is located. Sunlight will reach the bottom of this cavity for only a very short time during the day, if at all. B is in a small cavern on the south side of the rock pile. It opens to the north. The rays of the sun will never penetrate into its interior. The cavity opening is 15 in. by 16 in., and it is 18 in. deep. The thermometer is in as far as it can go. The cavity is covered by a rock about 1 foot thick. C is on the west side of the rock pile and opens to the west. However, it is doubtful that the sun's rays ever get to the bottom of the opening (direct rays). The cavity narrows down considerably in the back so that a thermometer can hardly be pushed to the end (about ½" wide). The cavity opening is 8 in. by 4 in., and is 20 in. deep. The opening is on the side of the main rock mass of the pile, and is about 3 feet below the top. D is on the north side of the rock pile and opens to the west. It is a rather exposed opening, so sunshine will reach it in the afternoon. The rock above it is about

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a foot thick, but there are crevices between it and surrounding rocks, so that the opening is not completely covered from above. The opening is 6 in. by 5 in., and is 18 in. deep. The extreme end will probably never have direct rays of the sun, even though the central position of the hole will at some times of the afternoon. (Blind is 7' x 5'.)

The overcast started to "burn off" at 0900 and was gone by 0915. at 0925 #33 was active just above 33 rock. at 0930 #3 was seen between rocks 3 and 6. at 1000 #2 was seen about 30 feet west of rock 33. at 1010 #17 was seen on rock 17. By 1025 #17 disappeared from sight. at 1035, however, #17 was seen in the sun [redacted] just below its number. at the same time, #2 had disappeared, but #33 was sitting in the sun about 3 feet above where #2 was last seen. at 1045, when we left the area, #17 + 33 were still basking in the sun. The rock surface temp. (thermometer shaded) was 33°C. (91.5°F.), rock surface temp. (exposed) was 42°C. (107.6°F.), air temp was 26°C. (79°F.). No other lizards could be seen from the blind. The overcast was entirely gone.

We returned to the blind at 1330. at this time #33 was seen sitting on

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a rock near rock 33 in the shade.
Air temp. — 31°C.
Rock (sun) — 45°C.
" (shade) — 39°C.
Station A — 31.5°C.
" B — 33°C.
" C — 28°C.
" D — 32°C.

The thermometers at A and D had direct sunlight striking the upper ends. Those at B and C were still in the shade. At 1420, when the air temperature was 32°C., no lizards could be seen except #33 sitting in the shade. There was a fairly strong breeze blowing at the time (it had been blowing almost all day). At 1445 #33 disappeared from view. A ground squirrel was active just above where it was resting, so this may have caused the lizard to move. No other lizards visible at this time. Rock temperature (shade) is 37°C. At 1535 #33 was seen in the shade at the top of the rock on which it had been seen last. A moment later it moved out into the sun. Air temperature at the time — 30°C.; rock surface (shade) — 36°C.; rock surface (sun) — 39°C. At 1548 a motorcycle roared over the hill behind us. When we looked

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back for #33 after he had gone, it had disappeared. We weren't sure whether the motorcycle caused it to disappear or not. At 1700 #2 appeared on the rock where #33 was last seen. It was basking in direct sunlight.

Air temp. — 28.5°C.
Rock surface (shade) – 31.5°C.
" " (sun) – 35.5°C.
Station A – 30.5°C.
" B – 33°C.
" C – 28.5°C.
" D – 32°C.

(There was no direct sunlight in any of the cavities at this time.)

#2 sat in the sun for about 5 minutes before it disappeared. At that time, however, #33 was seen very near the spot at which #2 disappeared. We left the area at 1710 while #33 was still visible. We reached the car at 1720, at which time we saw #13 + #14 basking in the sun. #13 was on rock 13, but #14 was on rock 41, about 90 feet from rock 14. There are no rocks connecting these two areas. They continued to bask as we drove by.

July 24 We reached the study area at 0900.

Air temp. — 21°C.
Rock (shade) – 25.5°C.

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Rock (sun) - 34°C.
Station A - 24°C.
" B - 25.5°C.
" C - 25°C.
" D - 23°C.

#8 was seen on top of the temperature recording rock pile at this time. This is about ~~35~~ 57 feet west of rock 8. #33 was seen just above rock 33 and #16 was on the south side of rock O at this same time. A lizard we thought was unmarked, when we saw it at a distance, turned out to be #1 on rock 12. This is across a rather steep canyon from where it was marked. We chased it into a crevice on rock 12, and left it at 0940. At this time, #18 was seen on rock 18, + #8 was still on our rock pile (temp recording). #17 was seen at 0945 on a rock about 50 feet east of rock 4, and about 50 feet south of rock 40. Also at this time an unmarked lizard was seen crawling over the rocks at the base of rock 17. By 1000 we have seen 7 lizards active, whereas at the same time yesterday we had seen only 3. No wind was blowing up to this time today, and there was no overcast this morning. At 1005 #33 moved

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into the shade. At 1010 #1 came out of hiding & sat on rock 12 in the sun. (Hereafter underlined numbers are rock numbers.) #33 has been sitting head downward on the same rock with its body in the sun, but it rock surface is somewhat shaded (since 1010). It is now 1025. At this time another lizard was seen hanging head downward on the shady side (S.W.) of a rock about 50 feet S.W. of 3. The lizard's left side is in sun, even though the rock surface isn't. At 1028 #1 moved down over the face of 12 until it reached the west edge. There it clung, head downward, in the shade. At 1035 it disappeared. At approximately the same time #33 moved onto another rock, sitting in the sun, but the rock surface faces west, so the surface isn't receiving the direct rays of the sun. At 1037 #33 disappeared under the edge of the rock. At 1040 #1 appeared where he had disappeared a few moments before. It is sitting on shaded rock, but it is in the sun.

At 1115:	station A - 26°C.
air temp. - 29.5°C.	" B - 28.5°C.
Rock (shade) - 31.5°C.	" C - 26°C.
" (sun) - 42°C.	" D - 26.5°C.

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All stations are in the shade yet. #17 was disturbed from its location at 1105. #1 is still hanging head downward in the shade on 12 at 1120. We left the blind at 1120. #17 was back in the spot from which it had been disturbed at this time. No. 7 was seen on 7 as we passed on the way to the car. At 1130 we saw #240 sitting in the shade on 240, #13 sitting in the shade on 13, and #41 sitting in the shade on a rock about 150 feet up the hill from 41.

July 25 I reached the blind at 0640. At that time #17 was sunning itself on the SE side of 40. Temp. at this time:

Air — 19°C.	Station A - 22.5°C.
Rock (sun) - 29°C.	" B - 25.5°C.
" (shade) - 19°C.	" C - 27°C.
(Sunrise - 0459)	" D - 23°C.

All stations were in the shade.

(Data on marked animals is being taken on mimeographed sheets.) An unmarked lizard was seen basking N. of the blind at 0800. At 0845 2 more were seen basking in the same general area. An unmarked young one seen basking on rock 75' W. of blind at 0845. A marked lizard was seen at 0905 on a rock between 3 and 6. It disappeared beneath the rock at 0915 without being identified. A marked lizard was

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seen crossing a rock about 50' N.E. of 4 at 1015. No identification could be made. An unmarked young one was seen at 1100 clinging to the sheer western face of a rock in the 33 pile. It is hanging head downward in the shade. It disappeared at 1130. Breeze began to blow about 1100. At 1620 a marked, but unidentified lizard, was seen sitting, head downward, on the shady side of a rock about 30 ft. west of 40. It moved into the sun at 1624, then dropped over the side of the rock at 1626. At 1635 it was seen hanging head downward where it was first sighted. This animal turned out to be #5. At 1708 a lizard could be seen on 6. When it moved across the face of the rock at 1712, it turned out to be #3. At 1745 all lizards have disappeared, apparently for the night. Rock (shade) temp now: 30°C.

" (sun) " " : 32°C.

Air temp. " : 25°C.

A moment later #2 + 33 were seen sunning themselves, and later #7 was seen out on a rock. #33 disappeared first, followed some minutes later by #2. Finally, at 1818, #7 went under the rock on which it had been sitting. The breeze was completely gone by now, but the sun was still ½ hour above the horizon. (Sunset—1859)

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Temperatures for the rest of the day are:

Time	0800	0915	1000	1110	1200	1300	1400
Air	22	27	30	32	32	33.5	33
Rock (shade)	22	28.5	31	35	36	38	39.5
" (sun)	29.5	36.5	40.5	45.5	49	49.5	43.5
Station A	24.5	26	26.5	27.5	28.5	28.5	30
" B	26	27.5	28.5	30	31	32.5	34
" C	25.5	26	26.5	27.5	28.5	29.5	30
" D	22.5	25	26	28	30	33	35

Time	1500	1600	1700	1800	~~1900~~
Air	33	31	29	26	
Rock (shade)	36	34	31.5	29	
" (sun)	40	38.5	39.5	32	
Station A	39	32	29.5	29	
" B	34.5	34.5	35.5	33.5	
" C	30	29.5	29	28	
" D	34	34.5	33	31	

0800 – all stations in shade.
0915 – " " " ".
1000 – " " " ".
1110 – " " " ".
1200 – " " " " except [redacted] side of D.
1300 – " " " " " " " ".
1400 – " " " " " top " A.
1500 – " " " " " all " A.
1600 – " " " ".
1700 – " " " ".
1800 – " " " ".

Far more animals were seen today than any day during which we have been observing so far. A total of 10

July 25 UCR campus, Riverside Co., Calif.

marked animals that could be identified and 2 unmarked animals on the observation area were seen. In addition, 3 animals just north of the observation area (unmarked) also were seen. Also seen were 2 marked animals that couldn't be identified.

July 29 Frank, Dee + I tried to mark some more lizards today. Two were captured + marked in the botanical garden area. However, one of them (#37) escaped from Dee before we were able to paint a number on it. Frank caught a lizard under the garbage can at greenhouse 16 when we returned. It was toe-clipped #1, so it must have escaped from the outdoor lizard cage. It was measured + toe-clipped 51. We will release it in the botanical area tomorrow. It was captured May 9, 1958 on Box Springs Mts., and measured 68 mm. Now it measures 85 mm. It was a young ♂.

July 30 The three of us returned to the same area today. Not many lizards were seen. One newly hatched lizard was captured + put in a sack to bring back to the laboratory for growth data. One other newly hatched lizard was seen, but not captured. The captured one was dead when

(These are the first young of year we've seen.)

July 30 UCR campus, Riverside Co., Calif.

we reached the lab. It was 32 mm. long (snout-vent), and was a ♂. It was preserved for class use. There still was a tiny opening in the lower belly where the yolk sac had been absorbed. Only 2 lizards were marked today, bringing our total to 59 marked animals, 9 of which were released from the lizard cages.

July 31 Today we marked 4 more lizards, and saw many more than that. They were active until 1030, even though it felt very hot to us. However, the humidity is quite high today, which makes us feel uncomfortable, even though the temperature is not too great. This apparently doesn't bother the lizards since they don't perspire. Our first month's activities have resulted in marking 63 lizards on campus. Of this number, 9 were released from the outdoor lizard cages. Of the remaining 54, 15 are immatures (1?, 7 ♂, 7 ♀) and 39 are adults (17 ♂, 22 ♀). Those from the cages are 6 adult ♂ and 3 adult ♀. There are still plenty of unmarked lizards on the study areas, but we are seeing many marked lizards during our noosing activities.

Aug. 4 UCR campus, Riverside Co., Calif.

This morning Frank Awbrey, Carl Westby & I, working in the botanical garden area, captured 3 more lizards and saw several marked ones. #51 has moved from the rock on which it was released to the large rock outcrop about 20 feet away on which several lizards have been marked (# 49, 50, 52, 57). #50 and 52 were also seen on the same rock outcrop. At 0935 #60 was seen on 60. At 1000 #43 was seen on 43 (in the shade) & #56 was seen on 56 (in shade). Air temp was 28.4°C. At 1010 #240 was 10 ft. east of 240 in sun, but the rock on which it was sitting sloped away from the sun so the light rays were striking at an angle. Rock surface temp. at that point was 35.5°C.

Aug. 6 This morning Dee, Carl, & Frank worked in area B. They captured and marked 5 more lizards, and observed several others. At 0730 #240 was observed in direct sunlight on 240. At 0735 #100 was seen in shade on 100. At 0800 the air temperature was 23.8°C. #38 was seen on 43. Its head was in the sun, but the body was in shade. #50 was seen on 50 in direct sun. At 0920

Aug. 6 UCR campus, Riverside Co., Calif.
#29 was seen on 29 in direct sunlight. At this time the air temperature was 27.2°C.

Aug. 7 This morning Carl, Frank & I worked in B area. We marked 5 more lizards. In addition, we recaptured #21. Its number had become partly lost so that only the 1 was left. It was repainted and released on 21 (where it had been caught). We also observed several marked animals this morning. #12 was seen on open ground along the west side of the road leading to the study area. It was about 50 feet south of the bee hives along the east side of the road. The time was 0740. It ran into dense brush beside the road and disappeared. There are no rock outcrops for a considerable distance in any direction from the point where it was seen. The rock on which it was released July 7 is over 200 yards away to the south-west:- over the side of one hill and across a ravine. #29 was seen in the sun on 29 at 0830, when the air temp. was 24°C. #30 was seen sitting in the sun on a rock about 75 feet uphill to the east of 30. An unmarked lizard (still unmarked) was later seen on 30. The last 2 lizards

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Aug. 7 UCR campus, Riverside Co., Calif.

were captured about 5 minutes apart at 1020. None were seen after that time. The temperature wasn't so very high today, but the humidity made it uncomfortable.

This afternoon we sacrificed #23 since she is still blind from the ant attack. Her oviducts were quite developed & convoluted. She had 6 ova 1-2 mm. in diameter in the right ovary (plus some smaller ova), and 10 ova 1-2 mm. in diameter in the left ovary (plus some smaller ones). Her head has quite a tawny color on it.

Aug. 8 This morning Dee, Carl, Frank & I worked in B and D areas. We caught a total of 10 lizards, but marked & released 7. Two ♂♂ were brought back to the lab. — 1 for a specimen, the other was placed with one of the ♀ we have been holding in captivity (#19). In addition, a newly hatched lizard was brought back for growth data. We saw one other newly hatched lizard, but couldn't catch it. The sky was slightly overcast for much of the morning, so it was fairly cool but quite humid. The last animal was seen & caught at 1030.

Mayhew 1958	Sceloporus orcutti	26.

Aug. 8 — UCR campus, Riverside Co., Calif.

The newly hatched young one (# 1) is 31 mm. long and weighs 1.57 gms. #78 was released about 50 feet S.W. of point of capture (near south border of campus).

Aug. 11 — This morning Frank & Carl worked on the far side (south) of area A. They marked one lizard and brought 2 ♀ back for preserving. We are making monthly collections of ♀ and are contemplating doing the same thing for ♂ to check changes in reproductive organs. Frank reported he saw a ♀ still active last evening at 1830. One of the ♀ collected today had eaten one Armadillidium, 1 cricket, several wasps, & the flower buds of the mustard, Brassica incana. The other contained several varieties of beetles.

Aug. 14 — Today 3 ♀ were autopsied to check on their reproductive condition. All were caught on the south edge of UCR. One, caught 7/14/58, but autopsied today, contained 16 ova in the right ovary, ranging from .75 mm. to 1.5 mm. in diameter. The left ovary contained 14 ova ranging from 1 mm. to 1.75 mm. The other 2, caught Aug. 10th, were as follows:

Right ovary	Left ovary
15 ova, 1 mm. to 1.75 mm.	11 ova, 1 mm. to 1.5 mm
15 " 1 " " 1.25 "	15 " , 1 " " 1.25 "

Aug. 20 UCR campus, Riverside Co., Calif.

This morning Dee, Frank & I went up to area B. We were checking the map Jo Ann drew for us of the area, so we didn't try to capture any lizards. We saw several unmarked immatures in the sun on various rocks, as well as several marked lizards. #240 was sitting in the sun about 1 foot from the number 240 on the rock at 0845. At 0855 #63 was seen in the sun from 40 to 50 feet S.W. of 63. At 0910 #30 and 67 were seen on the same rock, which is about 60 feet SE of the blind in B area. Lizards were still active in the sun when we left the area at approximately 0945. The morning was completely overcast until about 0830, when the sun burnt off the fog.

Sept. 2 Dee Munro took #19 and 39 back to their respective rocks this afternoon. Neither of them laid any eggs while in captivity.

Sept. 15 Frank & I worked on campus today, marking animals. We were able to mark only 3 animals. At 0820, the air temp. was 29.2°C. By 0930 the air temp. had risen to 32.5°C. There was a slight breeze blowing. The last animal seen (and caught) was seen at 1035. At that

Sept. 15 UCR campus, Riverside Co., Calif.

time the air temp. was 36.2°C. and the soil surface temp. was above 50°C. (thermometer only went that high). During the morning we saw 1 marked adult, 1 marked immature, 5 unmarked immatures (we marked 3), and 4 juvenals.

Sept. 26 Today Frank & I went to the south edge of the campus to collect some specimens. We reached the area at 0740 and left at 1015. The first animal was seen at 0800 (adult), followed momentarily by a juvenal. At this time, air temp. was 29.2°C., rock surface temp. (sun) was 33.4°C. In all, 2 juvenals, 2 immatures, and 3 adults were seen, but none captured. All of them were extremely spooky today.

Sept. 27 This morning Dee Munro worked area B. The first lizard seen (a juvenal) was observed at 0640. At that time, the air temp. was 24.2°C., the rock surface temp. was 28°C. This animal was basking in the sun on a rock which had been in shadow recently. An immature animal was seen at 0705. An adult ♂ and an adult ♀ were captured a short time later for anatomical study (outside the study area). All activity seemed to cease by 0930. At that time, the air temp. was 32.0°C.

Mayhew
1958

Sceloporus orcutti

Sept. 28 UCR campus, Riverside Co., Calif.

Dee Munro was in B area again this morning. At 0610 the air temp. was 27°C., the rock cave temp. was 28.2°C. Only 2 young animals were seen during his stay — both of these were in cracks in rocks — not out in the open.

Nov. 22 3 mi. S. of UCR campus, Riverside Co., Calif.

Frank Awbrey, Dee Munro & I went out to this area at 1140 today to try to obtain a sample for reproductive organs for this month. The day was warm and sunny with no wind blowing. The air temp. was 28.2°C., soil surface temp. was 43.5°C. while we were in the area. Nevertheless, we didn't see a single member of this species while we were there (until 1350). In fact, the only reptiles seen the entire time were 2 young Sceloporus occidentalis and 2 adult Uta stansburiana. As far as temperature & weather conditions were concerned, S. orcutti should have been out at this time.

Dec. 13 UCR campus, Riverside Co., Calif.

This morning Frank Awbrey arrived at the blind in section A at 0945. He remained at the blind until 1200, but saw no S. orcutti at any time. He didn't have a thermometer along, so we don't know the exact

Mayhew 1958

Dec. 13 UCR campus, Riverside Co., Calif.

temperatures, but the morning was quite warm. I reached the same blind at 1245 and continued the observations until 1530. During this period I also saw no S. orcutti of any age. Temperatures taken during this time were as follows:

1300:— air temp. — 28.4°C.
soil surface (sun) — 44°C.
rock " (") — 38°C.
" " (shade) — 28°C.

Wind and relative humidity readings were the same as those obtained by Frank in the morning:
wind — from N.E., 9-13 mph.
Relative humidity — 25%.

Except for a single Uta stansburiana seen by each of us (may not have been the same animal), no reptiles were seen during the 5¾ hours one of us was in the blind today. I left the blind approximately 1 hour before sundown.

1415:— air temp. — 28.9°C. (84°F.) (This was the official high temp. recorded in Riverside that day.)
soil surface temp. (sun) — 44°C.
1530:— air temp. — 26.9°C.; soil surface — 34.5°C.

This was the 4th day in a row when the maximum air temp. reached 80°F.

Dec. 13 UCR campus, Riverside Co., Calif.

or above, and the minimum night temp. were 40°F. or above. The temp. encountered today correspond closely with the temp. last summer when the animals were most active, but no sign of animals could be found today. Apparently more than temp. per se is involved in their activity patterns. It would seem that this rather continuous stretch of warm weather would warm up their hiding places sufficiently to permit the animals to be active. If this were the only limiting condition to their activity, one would expect them to be active now.

1959

Jan. 11 UCR campus, Riverside Co., Calif.

This afternoon Dee Munro spent a few minutes on study area A (about 1400). During his short stay, he saw one adult on #1 rock, which he thought was a ♀, and one juvenal. The day was nice and warm. This is the first time since October 19, 1958 that any of this species has been seen (Munro saw them up to that time, but not later). Since the temperature was not as warm as the extended warm period of Dec. 13 when Aubrey & I

Mayhew
1959

Jan. 11 UCR campus, Riverside Co., Calif.

watched on A area, it appears that something other than temperature is the triggering mechanism to bring these animals out. The official temps. for Riverside for the past few days are:

Jan.	8	71°F (max.)	43°F. (min.)
"	9	73	43
"	10	72	45
"	11	79	42

Jan. 17 2 mi. S. of UCR campus, Riverside Co., Calif.

Today at 1245 Dee Munro, Frank Aubrey & I arrived at our collecting site for reproductive samples. The official Riverside temperatures for the past few days have been quite warm:

Jan.	12	73°F. (max.)	42°F. (min.)
"	13	68	52
"	14	74	45
"	15	82	39
"	16	85	43

Today appears to be following the same trend. The official maximum temperature for today was 87°F.; the highest temperature we recorded today was 83.3°F. at 1250, the air temp. was 27°C. (80.6°F.), rock surface temp (in sun) was 33.8°C. (93°F.), and soil surface temp. (in sun) was 44.4°C. (112°F.). We captured one juvenal ♀ and 2 adult ♂ during our stay in the area. The

Mayhew
1959

Jan. 17

2 mi. S. of UCR campus, Riverside Co., Calif.

♀ was sitting in the sunlight on a large boulder at 1250 when it was first seen. The two ♂ were less than one foot apart when first seen. One of them was sitting with the ~~call~~ anterior part of its body in the sunshine while the posterior part was resting in the shade of a crevice. The other ♂ was completely in the shade in a crevice. Temperatures of the rock at the point where they were first seen were measured. These data are in the collection notebook for specimens number 15 and 16. Every animal we saw today was captured. We left the collecting area at 1450. All of the reptiles captured today (not only S. orcutti) were caught either in or within a dozen feet of a stream bed. Nevertheless, over 1/2 of our time was spent searching the rocky slopes without seeing a single reptile. It is possible the recent rain (Jan. 6 – about 0.70") may have brought out insects along the stream beds that are being used for food by the lizards. The two ♂ captured today are already becoming rather brightly colored on their backs.

Feb. 23 2 mi. S. of UCR campus, Riverside Co., Calif.

Frank Awbrey & I began looking for animals at 1130. At this time the air temp (30") was 15.8°C., the air temp (1 cm.) was 16.2°C., and the rock surface temp. (sun) was 21.2°C. It had rained in the area day before yesterday, and the soil was still quite damp. No animals of any kind were seen until we were leaving at 1215. Then we saw one Uta stansburiana. No clouds were in the sky and no wind was blowing. Nevertheless, nothing seemed to be moving at this time of the day. We felt it unwise to stay any longer because there were so many people shooting in the area.

Mar. 3 This afternoon at 1245 Frank Awbrey & I went after our monthly sample. Several animals were active at this time, so we were able to capture 1 adult ♂, 1 adult ♀, and 1 juvenal. They still aren't as numerous as one might ~~ex~~pect. The day was bright & clear with a slight breeze blowing. The temperatures remained approximately the same during our stay in the area (we stayed until 1435). The temperatures that we recorded at 1245 are as follows:

Mar. 3 2 mi. S. of UCR campus, Riverside Co., Calif.

air temp. (30") — 27.5°C.
" " (1 cm) — 28.4°C.
soil surface temp. — 42.5°C.
rock " " — 42°C.

April 11 UCR campus, Riverside Co., Calif.

This morning the field zoology class went with me to the south side of the campus. We were able to capture 1 immature (♀), 1 adult ♀, and 2 adult ♂. The adult ♀ was #13 from last summer's work. She still had enough paint on her back to have her number legible when she was in the hand. She had moved about 75 yards up hill (east) from ~~[illegible]~~ her marking location, and had crossed 2 dirt roads. At 1100 we saw #36 on rock #36 and #43 on rock #43. In both cases the paint was still clear enough to be readily legible without capturing the animals. This was very surprising to me since the latter two were immature animals when marked last July. Therefore, I would have expected them to have molted at least once since that time.

May 29 Box Springs Mts., Riverside Co., Calif.

This afternoon, between 1330 and 1520, Frank Awbrey & I were able to capture 6 animals (3 ad. ♂, 3 ad. ♀) that were sunning themselves

Mayhew 1959

Sceloporus orcutti

May 29 — Box Springs Mts., Riverside Co., Calif.

on exposed rocks on the hillsides. The animals are quite numerous in this area, and appear to be in breeding colors (at least the ♂♂). The breeze (5-7 mph.) that was blowing didn't seem to bother them in the least.

June 24 — 3 mi. N. of Sunnymead (Pigeon Pass Road), Riverside Co., Calif.

A fairly large number were seen near the road on rocks when we arrived at 0800 this morning. At that time, the air temp. (30") was 27.8°C., and the rock surface temp. was 33.8°C. By 0910, however, none could be found. At this time the air temp. (30") was 29.6°C. & the rock surface temp. was 39.5°C.

July 7 — UCR campus, Riverside Co., Calif.

Four animals were caught today, but 2 of them were especially important. One of them, #8, was captured on the same rock that he had been captured on just exactly one year ago today (that was his first capture). He is in fully breeding color now. The other marked animal (♂), #31, was caught today about 80 feet southeast of where it was captured for the first time last July 16. He also is in breeding colors. Both of these animals have gained 2 mm. in snout-vent length in the last year.

July 9 — 4 mi. N.W. of Sunnymead, Riverside Co., Calif.

Between 0710 and 1055 today we caught

July 9 4 mi. N.W. of Sunnyside, Riverside Co., Calif.
13 animals on the eastern slopes of Box Springs Mts. (8 ♂ and 5 ♀). Probably some were still above the surface of the ground on rocks after that time, but we had to leave then. However, none were seen after that time as we drove out of the area. The air temp. (30") at that time was 37.9°C. (>100°F.), so it is doubtful if many more would have been seen after that time, even if we could have looked longer. Several animals (8) were caught that are really intermediate between adults and immatures. It will be interesting to see what the histological appearance of their reproductive organs will look like.

July 16 Frank Awbrey & I caught 13 more animals this morning between 0555 and 1105. We worked almost exclusively in the chaparral zone, and all the animals of this species captured today were caught in chaparral. We worked over the top of the mountain and down the western slope almost to the "Big C". The animals were rather spottily scattered today — we occasionally saw 2 and once we saw 3 animals on a single rock, whereas at other times we covered a rather wide area of rocky

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July 16 Box Springs Mts., Riverside Co., Calif.

outcrops without seeing a single animal. I'm sure some animals were still to be found on the surface after we left, but we left to eat lunch. However, we saw no others as we drove out of the area.

Aug. 5 These lizards were not particularly wary, and my assistants caught all they saw between 0630 and 0745. As the day warmed up, however, they became more wary and several escaped capture. By 0830 these animals became very difficult to approach, and they would disappear while my assistants were still some distance from them. This was especially true of immatures. Females seemed to be very scarce. The last animals were seen at 0905. At this time weather conditions were:

air temp (30") – 28.5°C.
" " (1cm) – 30.5°C.
soil surface temp. – 42.0°C.
rel. humidity – 34%

1961

Jan. 17 UCR campus, Riverside Co., Calif.

Eugene Roller & I were on the hills behind the buildings from 1315 to 1430 looking for animals of this species, since I had seen 2 of them on rocks this morning (0920 and 1000). We caught 1 ad ♂ & 1 ad. ♀

Jan. 17 UCR campus, Riverside Co., Calif.

and saw 3 more adults and 2 juvenals. Today marked the 16th consecutive day with the air temp. above 70°F, so there has been plenty of heat to activate them. The nights have been quite warm also (usually above 40°F.). The air temperature (30") while we were out was 28.2 to 28.6°C. The ♂ was dark blue beneath, & was beginning to get its brighter breeding colors, but its testes didn't appear to be ready to produce sperm yet. The vas efferentia & v. deferens were not highly convoluted yet, nor were they white as they appear when sperm are present. The eggs in the ♀ had not yet begun to enlarge.

Jan. 31 Walt Moberly & I went looking for old numbers on rocks marking the location of earlier captures. We found 68 of the 89 markers during the day (0930 to 1230; 1330 to 1630). At 0930 the air temp (30") was 14.2°C. There was a 60% overcast, with a 0-3 mph wind from the S.E. We saw our first S. orcutti at 1020 (an adult). At this time the air temp (30") was 19.0°C., (1 cm) - 20.0°, and on the rock surface where the animal was seen was 26.0°C. About 1050 an adult ♂ was seen in the open on a rock about 3 feet from where #1 is painted on a rock. The sky was now 90% overcast. This animal also escaped from us. At 1130 an adult ♀ was seen about 1 foot below #13 painted on the rock. There

Jan. 31

UCR campus, Riverside Co., Calif.

was a juvenal also near this number. Neither were captured. at 1135 two Sceloporus occidentalis adults + 2 juvenal Sceloporus orcutti were seen. By 1145 the sky was 100% overcast, and the air temp. had dropped to 17.8°C. We found rock # 65, which was the number of the marked animal we caught earlier. It was approximately 100 yards S.E. of the site of capture last week. It had travelled downhill, across a rock-less area of about 75 yards, past a small rock pile, then across a dirt road to the final rock pile. There was relatively little cover between any of the three rock piles. The large open area was bisected by a rather large wash which crossed the lizard's path at right angles. at 1215 an adult(?) ♂ was captured. We left for lunch at 1230. When we returned at 1330, the air temp.(30") – 16.8°C. There was 100% overcast, but no wind. By 1515 the overcast was a thin 70%, and the temp (30") had climbed to 18.0°C. No lizards had been seen since our return at 1330. However, at 1520 we caught an adult ♂ that was in the open on a rock. at 1545 we caught another adult ♂ under similar conditions. It was marked #63. We found rock 63 about 25 yards to the N.W. of this capture site. There were rocks all the way between these sites. He had been marked as an adult Aug. 6, 1958. Those were the only two lizards seen this

Jan. 31

UCR campus, Riverside Co., Calif.

afternoon. The temp. didn't change appreciably all day while we were in the field, but the amount of sunlight did because of the clouds. We saw almost none of the animals while the sky was completely overcast. The reproductive organs of none of these ♂♂ are sexually developed now, even though the 2 fully adult ♂♂ were in their full breeding colors. When we quit looking for lizards at 1630, the air temp. (30") was 15.8°C.

Feb. 7

Walt Moberly & I went up on the hills this afternoon from 1410 to 1530. During this time we saw 6 animals (1 ad., 2 ad.?, 3 juv.) and captured 3 of them (1 ad., 1 ad.?, 1 juv.). The adult (#29) had been marked July 16, 1958 100 yards north of its capture site. He had gained 22 mm. in S-V length in that time. Weather conditions when we arrived were: air temp. (30") – 22.4°C. (1 cm.) – 24.0°C. rock surf. temp. – 26.2°C. 20% overcast S.W. breeze 3-5 mph. Clouds drifted in front of the sun quite often, so that by the time we were ready to leave, temps. were: air temp. (30") – 20.0°C. (1 cm) – 23.2°C. rock surf. – 29.0°C. Today was the first time I recall ever seeing a member of this species run upside down across an overhanging rock ledge. A juvenal ran over three feet in this fashion this afternoon in escaping from me.

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Feb. 21 UCR campus, Riverside Co., Calif.

Walt Moberly & I arrived in area A at 0835. At that time an adult ♀ was basking on 13 and 2 juvenals were out in the same area. These all escaped us, however. At this time weather conditions were as follows:

air temp. (30") — 20.6°C. wind 5-8 mph from N.
" " (1cm) — 20.6°C. 0 clouds
rock surf. (sun) — 27.6°C.

During the morning (to 1045) 5 adults and 5 juvenals were seen. We caught 1 adult ♂ (#3) that was marked July 3, 1958 about 100 yards uphill to the south-east from its present position. Now it was at the bottom of a wash, whereas it had been on the rockpile nearest the top of the hill before. There are 3 rock piles between the two sites. (I learned there are 5 rock piles between marking and recapture site of no. 29.)

At 0940 the weather conditions were:

air temp (30") — 24.4°C.
" " (1cm)) — 29.2°C.
(sun) rock surf. temp. — 30.2°C.

About 10 minutes later the wind increased in intensity to 10-15 mph. After this time only 2 animals were seen, and both of these were in protected locations. This was observed in spite of the fact that the other weather conditions were similar to previous readings when animals were active: 0 clouds

(1025) air temp (30") - 23.6°C. (1cm) - 23.6°C. rock surf. - 29.0°C.

Sceloporus orcutti

Feb. 21 UCR campus, Riverside Co., Calif.

I have the impression that winds of this intensity tend to discourage activity in the open in this species. Animals seen today were as follows:

Time	adult	juvenal
0835	I	II
0915		I
0925	I	
0940	II	I
1020		I (lee side of rock)
1040	II (lee side of rock)	

One adult and one juvenal were captured today. We left the hill at 1045.

March 6 Walt Moberly and I spent from 1250 to 1600 looking for lizards. The weather conditions during the afternoon ranged as follows: 100% overcast, 0–3 mph. wind, N.W.

	1250	1355	1430
air temp. (30")	16.0°C.	18.4°C.	17.4°C.
" " (1 cm)	16.6°C.	21.0°C.	19.2°C.
rock surf. temp.	20.0°C.	24.2°C.	soil surf. – 30.2°C.

During the afternoon we saw the following:

age	time
juv. to 1/2	1310
juv.	1325
"	1340
adult ♀	1355
juv.	1402

We were able to capture 2 of the above,

Mar. 6 UCR campus, Riverside Co., Calif.

Many more animals were seen a week or so ago, but the weather was so cool & overcast today it was a wonder we saw any.

Mar. 7 I saw only 2 animals this afternoon between 1400 and 1525 — an adult ♀ and a juvenal. Many rocky areas were examined with the aid of binoculars, but no lizards were seen. The temp. today was much higher than yesterday (see Journal notes), but animals weren't any more abundant than yesterday. Dave Young found several active this morning, & caught 3 of them (1 ad. ♂, 2 ad. ♀).

Mar. 13 2 mi. N.W. of Sunnymead, Riverside Co., Calif.

This afternoon Walt Moberly & I caught 2 juvenals and 7 adults (5 ♂, 2 ♀). We looked from 1350 to 1700. When we began looking, the air temp. (30") was 24.8°C., (1cm) - 29.5°C., soil 42.0°C. No animals were seen at that location, but the pile of rocks was fairly small, so maybe none lived there. We then went up a rocky slope in chaparral & found the animals. at this time, weather conditions were: air temp. (30") - 27.5°C. (1cm) - 28.4°C. rock surface (sun) - 37.4°C., 0 overcast, 3-5 mph. wind from NW. The last animal was seen on top of a rock pile at 1550, but it took us

Mar. 13 — 2 mi. N. W. of Sunnymead, Riverside Co., Calif.

about an hour to remove it from its hiding place, so we don't know what time the animals became inactive this afternoon. Weather conditions at 1540 were: air temp.(30") - 23.0°C. (1cm) - 23.6°C., rock surface - 29.0°C.

May 16 — UCR, Riverside Co., Calif.

I began looking for lizards at 0915 (high fog began to break about 15 min. earlier). At that time weather conditions were: air temp.(30") - 15.4°C. (1cm) - 19.6°C. rock (sun) - 27.0°C. The first animal of this species was seen at 0920. (wind 0-3 mph from SW, 10% overcast). During the morning the following animals were seen:

age	time
adult?	0920, 0950
imm.	0940, 0950, 1105
juvenal	0940, 0950, 0955, 1105
adult	1010, 1125

The last adult seen was the only animal caught. The rest of them were entirely too spooky for one person to catch. I quit at 1130, at which time weather conditions were: 5-8 mph wind from NW; 0 overcast; air temp (30") - 19.0°C.; (1cm) - 27.0°C.; soil (sun) - 47.6°C.; rock (sun) - 41.0°C.

May 25 — Box Springs Mts., Riverside Co., Calif.

This afternoon Bob Lasiewski & I went

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May 25 Box Springs Mts., Riverside Co., Calif.

up the east side of the mts. for some animals of this species. We left UCR at 1300. The weather was rather cool (as it has been nearly all month), the highest air temp. that we recorded for the afternoon was 21.8°C. There was considerable overcast (70%) as well. Consequently, we were able to catch only 3 adult & 1 juvenal animals (we saw 3 other adults) until time to leave at 1445. The weather was cooling off then, indicating that no more animals were likely to be seen. I got stuck while turning around, so we didn't get the pick-up back to UCR until 1915.

June 21 UCR, Riverside Co., Calif.

Walt Moberly, Warren Blakely, Bobby Mayhew & I looked for animals on campus, beginning at 0725. at this time the air temp. (30") was 18.4°C. Animals were extremely scarce. We looked until 1045 (air temp. then - 28.0°C.), and saw only 3 adults & 9 juvenals (2 juvenals caught). We went to the east side of Box Springs Mts. this afternoon from 1250 to 1430 with no better results (air temp. from 28.0 to 33.0°C.). Six juvenals & no adults were seen, but none were caught.

Mayhew
1961

June 22 Val Verde, Riverside Co., Calif.

at 0735 Walt Moberly, Warren Blakely, Donna Hobbs, Bobby Mayhew & I began looking for lizards at 0735 on Canyon Crest ave. No animals were seen at all. Then we drove to Val Verde & looked over rocks there. (air temp. at 0735 - 22.6°C.). Before we quit looking at 1020 (air temp. - 32.4°C.) we had captured 6 ♂ and 1 ♀ adults & 2 juvenals. In all, we saw 8 adults & 5 juvenals. These animals just are not as numerous as we have seen them in past years. None were seen after 1020 on our way back to UCR, even though we drove past several piles of rocks.

June 23 at 0735 Walt Moberly, Donna Hobbs, Warren Blakely & I returned to Val Verde for animals. Air temp. (30") at this time was 27.0°C. Several adults were seen & 5 were caught (4 ♂, 1 ♀). About 6 young were seen, one of which was caught. All animals had disappeared by 1015, at which time the air temp. was 32.8°C. We looked until 1035 (all the way back to UCR) without seeing any more animals. This extremely dry year must be taking a considerable toll (2.95 inches of rain to date - smallest amount since 1883, when 2.94 inches fell).

Mayhew 1961

June 26 Perris area, Riverside Co., Calif.

Walt Moberly, Warren Blakely & I left UCR at 0720 to finish our June sample. We began looking for lizards at 0740 when the air temp. (30") was 26.2°C. Several animals were seen about that time, but none could be captured. We caught our first animal at 0810. For some reason, most of the animals we saw today were ♀, whereas last week in this same general area we saw mostly ♂. By the time we drove through Val Verde, through the Gavilan Hills to Perris, we had captured 5 animals (4♀, 1♂). Since we were after ♀ primarily, we were happy with the result. All the animals we saw after 0900 were in the shade on rocks. By this time weather conditions were:

air temp. (30") – 32.4°C. (1 cm) – 35.0°C.

rock surface temp. (sun) – 46.0°C.

The last animal was seen at 0950 when the air temp. (30") had reached 34.0°C. We quit looking at 1000 when we reached Perris. These animals don't appear to be too numerous in the region worked today – about as abundant as at UCR.

Aug. 8 — Val Verde, Riverside Co., Calif.

Walt Moberly, Warren Blakely & I left UCR at 0650 for Mt. Rubidoux, but as the gate was still locked when we arrived, we drove to Val Verde. We reached a large rocky area at 0735. We caught several lizards here earlier in the year. These animals were rather abundant here today. We were particularly interested in learning whether any young had hatched yet or not. We didn't see a single real tiny one, although we saw several that were rather small. The smallest one we caught was 61 mm. S-V length, which is much bigger than newly hatched young. In addition to 5 adults (4 ♀, 1 ♂) we caught, we captured and ~~rel~~ released the following:

sex	S-V length (mm)	cloacal temp. (°C.)	Time
♀	80	33.4	0800
♀	71	35.8	0810
♀	61	32.6	0825
♂	69	33.0	0840
♂	78	35.0	0935
♂	71	35.0	0950

At least a couple of dozen other animals were seen that weren't captured. No animals were to be

Aug. 8 Val Verde, Riverside Co., Calif.
seen by 1000, although the air temp. (36") at that time was only 33.0°C. I don't think any of the animals we saw today had hatched this year. It appeared that the young ones we saw fell roughly into 2 categories: 1) those that hatched early last year & 2) those that hatched late last year. We left the area shortly after 1000, & arrived at UCR at 1020.

Sept. 26 Today at 1100 I left UCR to look for juvenals. I spent most of my time looking at rock piles on Wood Road and Cajalco Road. It really was the wrong time of the day for major lizard activity, so I didn't expect to see too much. However, I did see 2 adults and 2 large immatures, but no juvenals. Since some of the larger animals were out, juvenals should have been, if any hatched successfully this year. Since this was the driest year on record for Riverside since 1883 (2.95 inches of rain from July 1, 1960 to June 30, 1961), I feel that few, if any, juvenals were produced. This area is the one that had the largest adult population that we could find

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Sept. 26 Val Verde, Riverside Co., Calif.

this year, so if any young were produced this season, some of them should be seen here. I returned to UCR at 1400.

Sept. 27 Kenneth Evans & I left UCR at 0830 to see if any juvenals were active in the morning. We looked over rock piles on Markham Road, Wood Road, & Cajalco Road. We saw only 2 juvenals all morning (we looked for lizards from 0845 to 1110), one of which we were able to catch & measure. In addition, however, we saw 4 adults and 7 immatures. Of this number, we were able to capture 3 adults and 4 immatures (1 other immature was captured & released). It appears that very few young were successfully produced this year.

UCR, Riverside Co., Calif.

Bill Truesdell captured 3 animals in his traps on the south side of the campus during the last couple of days. One of these traps has a rock over it for a lid, or cover. These animals were measured, toe-clipped and released. They measured:

No.	sex	Length (mm) - SV
1	♀	74
2	♂	84
3	♀	78

Sept. 30 — Perris, Riverside Co., Calif.

Ken Evans caught one animal today. It was a ♀ 88 mm. long (S-V), whose cloacal temp. was 30.4 °C. It weighed 29.2 gms., & was caught at 1000.

Oct. 2 — UCR, Riverside Co., Calif

At 1300 I went up to the big rock pile south of the avocado grove to try to catch some marked animals for growth data. I saw several, but succeeded in catching only one. However, I was able to catch 3 on the auditorium wall of LSB. I had released these animals on July 3rd. The cloacal temps. of 2 of them were: (#11) 32.8 °C. and (#7) 36.5 °C. I failed to get the temp. of the other one.

Oct. 3 — Bill Truesdell & I looked for lizards from 0910 to 1130. During that time we caught 4 and saw several others. All but 1, which was a juvenal, were immatures. Not an adult was to be seen. Two of the 4 were toe-clipped, so we were able to get some growth data from them. Cloacal temps. were obtained from all the animals that were captured, as well as S-V lengths. Then they were released. Two were caught on the large rock pile south of the avocado grove, the other 2 were taken on Mount Oski.

Oct. 24 UCR, Riverside Co., Calif.

At least 2 of the lizards released beside the auditorium attached to Darwin Hall are still active. I have begun to observe their active periods for this time of year. At 1615 one of them was in the sun on the side of the building. Air temp. at the time was 23.6°C. At 1635 it was in the shade at the same spot. Air temp. by then was 22.8°C. The sun disappeared behind the library at 1640, producing sundown at the lizard's location. Nevertheless, it remained at that spot until 1655, when it disappeared into the bushes below (air temp. 21.8°C). This animal is somewhat over 1/2 grown.

Oct. 25 When I arrived at 0815, no lizards could be seen anywhere about the building. However, the sun had not yet reached their hiding places for the night. The sunshine reached these hiding places at 0830, and 2 animals could be seen on the wall at 0840. One was in the sun, the other in the shade. Air temp. at the time was 19.4°C.

At 1015 (air temp. - 25.8°C.) 2 animals were on the ground. One was in broken shade beneath a palm tree, the other was in the sun among some rather dense vegetation.

Oct. 25 UCR, Riverside Co., Calif.

I have the feeling they were foraging for food among the plants. Both disappeared beneath vegetation at my approach.

at 1100 (air temp. 27.4°C.) both were on the side of the auditorium about 4 feet above the ground. One was on the east side of the building in the sun. The wall was barely in the sun, but the animal was in full sunlight. The other animal was on the south wall in the broken shade of ~~the~~ palm fronds.

at 1130 (air temp. 28.8°C.) both animals were on the side of the building (east side). The wall was in the shade, but the animals were still in the sun. By 1140, however, one of the animals also was in the shade. Nevertheless, it didn't move from its spot.

at 1320 (air temp. 30.0°C.) one animal was on the ground in the shade beneath the palm tree.

at 1400 (air temp. 28.4°C.) one animal was in the sun on the wall. The sprinklers were watering the plants beneath, and I think this reduced the air temperature somewhat below the previous reading.

at 1430 (air temp. 28.6°C.) one was in the shade on the south side of the auditorium,

Oct. 25

UCR, Riverside Co., Calif.

while the other was in the sun at the S.E. corner of the building. Both were about 3 feet above the ground. The one in the sun was head-down, the one in the shade was head-up.

At 1500 (air temp. 27.4°C.) these animals were still in the same places.

At 1530 (air temp. 25.6°C.) both animals were in the sun, facing horizontally along the wall of the auditorium (south wall).

At 1600 (air temp. 24.6°C.) one was in the shade on the south wall, the other was in the sun. The shaded one was horizontal, the one in the sun was head up.

At 1710 one of them still was on the south wall about 3 feet above the ground. It had its head beneath 2 rather small leaves on the branch of a shrub that was touching the building. Apparent sundown (sun went behind library) occurred at 1640, actual sundown occurred at 1703. Air temp. at this time was 22.0°C. I watched until 1730 (air temp. 21.8°C.), but it remained in the same place.

This lizard was in exactly the same place when I looked at 2230. At that time the air temp. was 15.2°C. Lights shining in Darwin Hall partly illuminated the area, but a flashlight was necessary
(Minimum air temp. tonight — 11.1°C.)

Oct. 25 UCR, Riverside Co., Calif.
to see if the lizard was still there. Apparently it is going to spend the night on the wall.

Oct. 26 When I looked for the lizard at 0820 (air temp. 18.0°C.), it was not where it had been at 2230 last night. However, it was seen about 3 feet further east on the same wall. Last night its head was beneath a small branch of a shrub whose leaves are about 2" x 4". Little protection was afforded the lizard. This morning, however, it was beneath the branches of another shrub that has very small leaves but the leaves grow very close together. Consequently, the lizard was in a more protected spot that it was in at least to 2230 last night. When I approached it closely this morning, it descended the wall and tried to hide beneath a ledge of the building. However, I was able to catch it by hand & obtain its cloacal temp. At 0825 it had a cloacal temp. of 19.8°C. It was toe-clipped #7(♂). No sunshine had reached its location yet for 2 reasons: 1) Darwin Hall was between its location and the sun; 2) the sky was overcast so that no sunshine was reaching the ground.

Oct. 26

UCR, Riverside Co., Calif.

At 0925 (air temp. 19.9°C.) this animal was back on the wall near where it had first been sighted this morning. (It had been released on the ground in dense vegetation after its cloacal temp. had been obtained.) The sky is still overcast.

At 1130 2 animals were on the south wall about 3 feet above the ground. One was in the sun, the other in the shade. Sunshine was reaching the earth through a break in the clouds. Both animals were noosed, and their cloacal temps were:

#7 ♂ 26.4°C. in shade 3 ft. chase
#11 ♂ 29.8°C. in sun 0 ft chase.

air temp. (100 cm) – 21.0°C.
" " (1 cm) – 24.0°C.
wall surface – 27.0°C.

Six animals were released at this site July 3, or Aug 9., 1961. Only 2 have been seen the past few days. These 2 lizards were released on the ground beside the dense vegetation near the wall.

Although I looked on the wall several times this afternoon, no sign of a lizard could be found. However, the sky has been completely overcast since noon. The air temp., though, has been above that which

Oct. 26 UCR, Riverside Co., Calif.

one would expect to drive them under. That is, it was within the range that occurs when these animals are active.

Oct. 27 No animals were seen on the auditorium at 0805, 0930, or 1020. Air temp. by 1020 was 17.6°C. No lizards seen (of this species) at 1120. None were seen at 1330 (air temp. 22.0°C.)

None were seen at 1545 (air temp. 21.6°C.).

Oct. 30 One was seen on the south wall of LSB auditorium at 1135 (air temp. 16.4°C). The sky was overcast with only a few spots of blue sky showing. Sunshine wasn't reaching the ground. The animal was head-up about 3 feet above the ground.

None was seen at 1345 (air temp. 15.8°C.). The sky is still overcast.

Oct. 31 No animals were seen at 1330 today, but this wasn't too surprising because the sky was completely overcast.

Nov. 1 None seen on the wall at 1020 or 1115. Sky was clear at 1020, partly cloudy at 1115, but the weather was rather warm at both times (above 20°C.).

Nov. 2 At 1020 and at 1110 one animal was sunning itself on the south wall of the auditorium. The air temp. at 1130, when the animal was seen again, was 18.4°C. It is quite sunny today.

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Nov. 2 Val Verde, Riverside Co., Calif.

This afternoon the following animals were seen between 1330 and 1515 (air temp. at 1 meter ranged from 19.0° to 17.2°C.):

Time	
1330	1 adult (shade)
1335	1 juv. ♀ (sun)
1345	1 juv. ♂ (sun)
1405	1 immature (sun)
1415	1 juv. (sun)
1500	1 adult ♂ (sun)

This is the latest in the year that I have ever seen them out. The last animal seen was a large ♂, even though the air temp. at 1 meter had cooled to 17.2°C. The sky was completely clear & there was no wind blowing. The 2 juvenals that were captured were brought back to UCR. Their vital statistics:

#20 juv. ♀ 35 mm. (S-V) 1.7 gms.
#30 juv. ♂ 46 mm. (S-V) 2.6 gms

They were released on a rock on the E. side of the auditorium attached to LSB.

Nov. 3 UCR, Riverside Co., Calif.

At 0945 #30 was seen in the sun on the east side (wall) of the auditorium. It was noosed & its temperature (32.0°C) taken. Air temp. at 1 meter was 18.0°C.

At 1130 2 immature and 2 juvenal animals were in sight. One immature and 1 juvenal

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1961

Nov. 3 UCR, Riverside Co., Calif.

were captured at this time, their cloacal temps. recorded, & they were released. Their vital statistics: air temp. (1 meter) - 22.2°C.

#11 imm. ♂ 77 mm (S-V length) 33.0°C. in sun 1130
#20 juv. ♀ 35 mm " 35.8°C. " " 1130

Val Verde, Riverside Co., Calif.

I reached the collecting site at 1300. air temp. (1 meter) at this time was 23.8°C. Seven animals were seen between then & 1445, as follows:

Time		
1300	1 juvenal	
1305	1 immature	cloacal temp. - 34.6°C.
1330	1 adult	cloacal temp. - 33.0°C.
1340	1 juvenal	
1350	1 immature	
1355	1 juvenal	
1425	1 juvenal	

Two of these animals were seen several times. For example, the immature seen at 1305 was caught at 1315, and was seen again at 1430.

I left the area at 1445. By this time the air temp. (1 m) had dropped to 23.0°C. All these animals were seen in an area ~ 200 yards long and 50 yards wide. It was very difficult to find any animals after 1400, even though the air temp. had changed only very slightly.

Nov. 7 UCR, Riverside Co., Calif.

One large immature was seen on the south wall of the auditorium at 1220, sunning itself.

Nov. 9 A large immature was seen on the east wall of the auditorium at 0950.

Nov. 10 A large immature was seen several times today on the east wall of LSB auditorium.

Nov. 14 A large immature was seen on the east wall of the auditorium at 1155 & 1250. No sign of the animal was found at 1400.

Nov. 20 No animals have been seen on the wall since the 14th even though I have looked just as often as before.

1962

Jan. 3 Val Verde, Riverside Co., Calif.

Bill Tweedell, Walt Moberly & I looked for animals from 1405 to 1520 without seeing any. This, despite the fact the winter has been very mild.

Aug. 8 UCR, Riverside Co., Calif.

Jay Sugarman wrote me that a female he caught June 15, 1962 has been laying eggs recently. Several lizards are in the cage, but a friend of Jay's saw this female lay one of the eggs, and the remainder look like that one. The laying dates are:

Aug. 8 — UCR, Riverside Co., Calif.

July 27 – 1 egg (16 × 11 mm)
" 28 – 1 " (16 × 11 mm)
" 29 – 2 eggs
Aug. 1 – 2 " (one of these was seen laid)
" 3 – 1 egg
" 5 – 2 eggs (16 × 11 mm & 13 × 9 mm)
" 6 – 3 " (13 × 10 mm [2])

Sept. 17 — Jay Sugarman brought in 6 additional eggs that had been laid by a S. orcutti he thought was a male. The animal also laid a 7th egg that was dessicated when he found it. The information Jay provided is as follows: This lizard was captured at UCR a few days after June 15, 1962.

Sept. 1 – 3 eggs, 18 × 11 mm; 1 egg, 19 × 11 mm. (Jay saw the 2nd egg laid.); 17 × 11 mm.
Total – 5 eggs

Sept. 6 – 1 egg (18 × 11 mm) seen laid by Jay – same lizard that laid Sept. 1st. An additional dessicated egg found also today – may have been laid several days earlier.

UCR, Riverside Co., Calif.

Oct. 31 — Ken Evans caught 2 juveniles in 5-gallon traps on campus this week. The measurements are:

Sex	S-V length (mm)
♂	36
♀	36

Nov. 26 UCR, Riverside Co., Calif.

Bob Roth captured a juvenile ♂ near the back of the campus today. Its measurement — 33 mm (S-V).

1963
Jan. 8 UCR, Riverside Co., Calif.

At 1410 Herta Caylor, Shirley Hill, Dennis Miller & I began looking for lizards on the south edge of the campus above the old reservoir. We saw 2 lizards between then and 1515, both of which we caught. One was a juvenile (35 mm S-V), the other an adult ♂ (96 mm S-V). The adult was very thin, but was quite active. It appeared as though it might have just emerged from hibernation. This is the earliest date I have seen any of these lizards active. It began to cool off rather rapidly by 1500, and since no trace of any other lizards had been found by that time, we returned to campus.

Jan. 16 I worked over the S.E. portion of the campus from 1320 to 1430. The last 3 or 4 days & nights have been very cold for this area (down to 24°F.). In fact this has been the coldest weather here since 1950. Consequently, I was anxious to see if the 2 animals I caught last Tuesday were still

Mayhew
1963

Jan. 16 UCR, Riverside Co., Calif.
active after these low temperatures. The environmental temperatures at the rock pile were: air (1 m) - 20.0°C; (1 cm) - 26.8°C; soil - 37.0°C. No clouds or wind were present. The juvenile animal captured on the 8th was seen again in the same rock crevice. It was successful in eluding my noose the entire time it was visible (1335 to 1350), so I was unable to obtain its temperature again. No other S. orcutti were seen, even though I searched diligently at the spot where the other animal had been released Tuesday. A number of other rock outcrops were also examined without success.

Jan. 23 Markham Road, Val Verde, Riverside Co., Calif.
Dennis Miller & I looked for lizards from 1330 to 1430 without seeing a single one. The air temp. (1 meter) was 21.5°C. with no clouds or wind. The 2 animals seen Jan. 8 are the only ones seen so far this year. We checked rock piles on Markham Road, Wood Road, Cajalco Road & Oleander Road without results.

Jan. 28 UCR, Riverside Co., Calif.
I went up on the hill at the south edge of the campus at 1300, but no animals were out. air temp. (1 m) - 14.0°C, no wind, very hazy sunshine.

Sceloporus orcutti

Jan. 28 UCR, Riverside Co., Calif.

The sun could just be seen through the fog. There has not been a really get period for S. orcutti since the two were seen Jan. 8.

Feb. 4 Shirley Hill & I looked for lizards on the rock pile at the south end of the campus from 1325 to 1430. We saw 7 lizards during this period, & caught 4 of them. The air temp. (1 meter) during this period was 30.5°C. The past two days are the only warm days we have had since early January (8th). No ~~[illegible]~~ really large lizards were seen today — mostly juveniles with an occasional immature (1 adult ♀). The captured ones possessed fairly high cloacal temperatures: 31.6°, 35.2°, 31.6°, 36.6°C.

May 9 Mark Dreher & Dick Tichy caught several lizards this afternoon, among them one marked (toe-clipped) ♀ (# 2) 90 mm (S-V). She measured 48 mm. (S-V) when marked and released 11 April 1961.

2 young were also captured. They measured:

im. ♀ — 45 mm (S-V)
im. ♂ — 53 mm (S-V)

4CK, Riverside Co., Calif. 24

The same small group (2' diam.) through
the top. Then two and then a small
[illegible] planned for S. [illegible] since the
[illegible] taken from Jan. 9.

Shirley Hill and I looked for Lygodes on 4
the north path at the north end of the
campus from 1325 to 1430. We saw
7 Lygodes during this period and caught
4 of them. The air temp. (shade) during
this period was 30.5°. The ground
was damp and the soil warm where
we had had rains [illegible] January (the
[illegible] mostly large Lygodes were
[illegible] mostly juveniles [illegible]
[illegible] numerous (adults of)
the captured were previously [illegible]
[illegible] temperatures: 31.6, 25.2, 31.5, 30.6 (?)

Mark [illegible] and Dick Tinkley caught 9
several Lygodes this afternoon, among
them one marked (toe-clipped) ♀ (# 3)
70 mm (S-V). She measured 48 mm (S-V)
when marked and released 11 April 1961.
A young was also captured. They
measured:

[illegible] ♀ — 45 mm (S-V)

[illegible] ♂ — 53 mm (S-V)